THE
RAILWAY GAZETTE
A Journal of Management, Engineering and Operation
INCORPORATING
Railway Engineer · TRANSPORT · The Railway News
The Railway Times · Herapath's Railway Journal · RAILWAY RECORD.
RAILWAYS ILLUSTRATED · ESTABLISHED 1835 · THE RAILWAY OFFICIAL GAZETTE

PUBLISHED EVERY FRIDAY
AT
33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1

Telegraphic Address: "TRAZETTE PARL., LONDON"
Telephone No.: WHITEHALL 9233 (8 lines)

Annual subscription payable in advance and postage free
British Isles and Abroad .....£2 5s. 0d.
Single Copies .....One Shilling
Registered at the General Post Office, London, as a Newspaper

VOL. 82 No. 24 FRIDAY, JUNE 15, 1945

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NOTICE TO SUBSCRIBERS

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POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE *possesses the necessary permit and facilities for such dispatch.*

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

TO CALLERS AND TELEPHONERS

Until further notice our office hours are: Mondays to Fridays 9.30 *a.m. till* 5.30 *p.m.*

The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

Nationalising Transport

SO far, although the Labour Party is again putting forward its electioneering cry of transport nationalisation, it has given little indication of the means by which this is to be achieved, or the benefits which are to flow from it. As was pointed out in *The Financial News* recently, it might have been thought that in a matter so fundamental, the most detailed plans and schedules would have been prepared, showing precisely what the party intended to take over, if it came to power, what compensation it would offer to existing proprietors, and what it meant to do with transport once it had become the owner. In fact, transport nationalisation remains a political abstraction. There is more than a shrewd suspicion that when election politicians talk of nationalising transport, they mean inland transport, and when they say inland transport, they mean taking over the railways, but to do that and leave the rest would make confusion far worse confounded. It is admitted by all directly concerned with transport that the question how best the public interest can be served turns not on financial ownership but on the relationship of different transport branches to each other. If a political party sincerely believes that some kind of co-ordinating and directing organisation at the top is inevitable to the optimum use of transport facilities and that this can be provided only if transport of every kind belongs to the State, it should first make out a convincing case for that serious curtailment to a number of individual liberties. It should then produce an articulated plan for administering transport as a unit, which will command acceptance as not only technically sound but the best that human ingenuity can provide.

* * * *

Industrial Equipment for Export Trades

During the war British exports have declined from £532,000,000 to £330,000,000 a year, despite a considerable rise in the value of goods exported. On the other hand, exports from the United States have risen from £717,000,000 in 1939 to £3,520,000,000 in 1944. The latter figure included lease-lend goods, but it is clear that the United States exports have been increased in volume during the war. The need for a great increase in British exports is widely acknowledged, and Mr. Oliver Lyttelton, President of the Board of Trade, told the Institute of Exports recently that to achieve this it would be necessary to instal the most modern tools and equipment, so as to bring our industries to the highest state of efficiency. Development, replacements, maintenance, and repair of industrial installations in large part had been held up for more than five years, and an immense demand in this field had accumulated. Mr. Lyttelton, however, did not deal with the principal factors which deter industrialists from adopting the course he urged. These are, first, the restrictive taxation policy which has precluded the maximum modernisation of industrial works, and secondly, the lack of definition of policy as to the control and direction of trade, which all too often has stultified enterprise.

* * * *

Tourist Development in Great Britain

The annual report of the executive committee of the Travel & Industrial Development Association of Great Britain & Ireland for the year to March 31 last, will be submitted to the annual meeting to be held on June 20. The report states that the Government recently has declared its intention to encourage the tourist industry and it has asked the Travel Association to undertake preliminary work. An estimate of the value to this country of tourist business before the war was of the order of £30,000,000 a year, but Lord Derby, President of the Association, considers it could be made to yield £100,000,000. To survey the prospects of developing tourist business, the Travel Association is remodelling its organisation. A Board of Management is being formed, representative of interests directly concerned with tourist traffic, such as the Government, shipping companies, railways, airlines, road transport, local authorities, motoring organisations, hotels, brewers and travel agencies. This board will advise the General Committee, of which Sir Douglas Hacking is Chairman, as well as being Chairman of the Board of Management. At the annual meeting it is expected that formal assent will be given for the work of reorganisation, so that planning may proceed without delay.

* * * *

L.M.S.R. Research Staff and British Universities

A practical scheme for the closer linking of science with industry has been agreed recently by the L.M.S.R. and the universities of Great Britain. Each year one or two graduates on the scientific staff of the L.M.S.R. research department will be seconded to do fundamental research in university laboratories. Part of their time at the universities may be spent also in teaching. At the same time, members of university staffs will work on applied problems

in the L.M.S.R. research laboratories at Derby or elsewhere. In addition they will have opportunities of seeing how the results of research are applied in the company's engineering departments—civil, mechanical, electrical, signal and road motor transport. In promoting the scheme, further details of which are published elsewhere in this issue, the L.M.S.R. hopes that it will contribute to a closer understanding between the universities and industry. It would appear that this scheme, which might well be expanded to include other branches of industry, could be adapted to play an important part in the intensive technical developments that must form part of this country's industrial progress.

* * * *

The Rule of the Road

We record in a news paragraph this week that road traffic in Argentina changed over to the right-hand side of the road on June 10. When this measure was announced some time ago, the Argentine Government stated that the change would bring Argentina into line with the rest of the American Continent, with the exception of Uruguay, and was in accordance with the recommendations made at the various road congresses to which Argentina had sent delegates. It may be recalled that the change from the left-hand rule of the road to the right-hand was made in Paraguay on February 25 last, and that, since the Argentine announcement, Uruguay has taken steps to go into line and has fixed July 1 of the present years for the changeover in Montevideo, although the 18 remaining departments have yet to make their decision. In Argentina it was stressed that the changeover should be made as soon as possible in view of the fact that a great number of public transport vehicles will have to be replaced shortly, and an early change will avoid incurring the expense of altering the driving position, as has had to be done until the present. These steps towards the standardisation of the rule of the road throughout Latin America are logical, particularly in view of the enormous increases in international road construction, notably the Pan-American Highway. One repercussion which should not be overlooked is that the change tends to benefit U.S.A. motor manufacturers and to deter Latin American purchases of road vehicles in Great Britain.

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Unification of Screw Threads

Considerable difficulties have arisen during the war, as indeed they did (though to a lesser degree) during the war of 1914-18, because of the differences between British and American screw thread standards. This time an attempt to meet some of the difficulties has been made, and an "interim war standard"—a truncated Whitworth thread—has been evolved, as a result of conferences held under the Combined Production & Resources Board of the United States, United Kingdom, and Canada. These conferences have been encouraged by the three governments concerned, in an effort to achieve some measure of interchangeability. A further conference will be held in America in the autumn to decide war standards for pipe threads, Acme screw threads, buttress threads, and instrument threads. Before this matter is again opened, those particularly concerned with the matter, together with the British Standards Institution, are anxious to obtain representative opinions of British engineers on the matters involved. To provide an opportunity for this discussion, the Institution of Mechanical Engineers is calling a whole-day conference on the unification of screw threads, to be held in the Institution on Friday, June 22, when several short papers will be presented. Admission will be by ticket obtainable on application to the Institution. In the morning session, consideration will be given to the forms of thread for which unification seems possible; in the afternoon, wider aspects of the matter, and the permanent unification of screw thread standards, will be discussed. It is hoped that the conference will enable those British engineers who are serving on the inter-governmental committees to arm themselves with up-to-date and authoritative views on the subject, to take with them to America in the autumn.

* * * *

The Use of Aluminium

The fall in the price of aluminium and the large quantities which are available suggest that it will find an increasing use in commerce. Also there is likely to be a shortage of steel as requirements grow for civil use. Already investigation is in process on new uses for this metal and every encouragement is being given to prospective users. Obviously the railway companies will not be behindhand in the necessary research on this question. Whether aluminium will take the place of steel for the side panels and roofs of railway coaches is problematical, but all the necessary characteristics are there, including that of light weight, which counts more and more in the railway and transport world. There are many internal applications on railway rolling stock that might lend themselves to similar treatment. During the war many interesting developments have taken place in the colour anodising of aluminium in a wide and attractive range of tints. The effects of suitable colour blending by this technique are interesting and open a vast field to the engineer and designer. We can visualise its use for the interior fittings of coaching stock and its wide application to buffets, hotels and offices.

* * * *

Signal Aspects on the Sceaux Line

The suburban line from Paris to Sceaux, at one time part of the Paris-Orleans Railway, is worked by the Metro separately from its other lines, on the 1,500 volt d.c. overhead system and the signalling is of a special kind. The signal aspects differ not only from those met with on the original Metro routes, worked on the third-rail system, where the red, green, white system of lights is retained, but from those on the French National system, standardised by the Government some years ago. On the Sceaux line absolute stop is indicated by one red light, and a black signal, or "semaphoric" stop, by two, the reverse of main-line practice. Caution is indicated by two yellow lights and this is in turn announced by three yellow lights for "attention." This fourth ordinary running aspect was in use before the acceptance by the authorities of the green-over-yellow aspect for the same purpose on the national system, as explained in an editorial note in our March 9 issue, and some details of the working of the signals and the intermittent inductive cab signalling appeared in our July 21, 1939, issue. The single yellow aspect is used to control a diverging movement. It is not clear how the authorities came to agree to a system of aspects differing from, and in one important respect contradicting, the practice laid down in the rules applying to the main lines. The Sceaux line signalling is of interest, because of the possible application here of automatic train control in multiple-aspect areas.

* * * *

An Achievement in Visual Presentation

Although sectioned perspective views often have been used with great effect in the past, especially by makers of automobile and aircraft engines, to illustrate the manner of working of their productions, hardly anything has been done in this direction in the locomotive world. We do recall, however, such a view of a locomotive cylinder and slide-valve, in a well-known series of technical books which appeared in our boyhood, which presented the slide-valve's functions so admirably that after a short inspection the whole purpose of the device seemed to flash out in perfect clarity; and we can well remember the satisfaction of having mastered the fundamentals of the slide-valve with far less effort than the reading of a long description and the studying of many conventional drawings would have required. In view, however, of the lack of such drawings of locomotives in the past, all the more credit is due to Mr. V. C. Stockton for the remarkable achievement which we reproduce on p. 596A. It is hard to know which to admire the more—the cool, clear conception of what he intended to convey, or the masterly way in which the information has been presented. In spite of the greater experience which has been gained with this method of presentation in other fields of engineering, the present example, despite the virtually new field, is an achievement which it would be hard to surpass.

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Modern American Locomotive Prices

In our April 27 issue some details were given of current locomotive prices in the United States, based on figures issued by the Interstate Commerce Commission. The examples quoted covered diesel and steam locomotives, and both articulated and non-articulated units of the latter. The prices given were quoted in dollars. A member of the British locomotive manufacturing industry has converted the U.S. currency to sterling and has also sent us the table below, which shows the approximate unladen weight of the locomotives and the price per ton.

Description	Cost		Approximate weight empty	Price per ton
	U.S. $	£ sterling	Tons	£
5,400-b.h.p. quadruple unit diesel-electric	482,900 to 509,000	120,725 to 127,250	347 to 377	348-338
6,000-b.h.p. triple unit, passenger diesel	522,000	130,500	no record	—
534-ton Union Pacific 4-8-8-4 articulated "Big-Boy" class with 14-wheel tender (steam)	319,600	79,900	377	212
Union Pacific 4-6-6-4 steam, articulated	285,740	71,435	322	222
Chesapeake & Ohio 2-6-6-6 articulated	278,170 to 283,300	69,542 to 70,825	no record	—
Non-articulated steam-type 4-8-4 tender	194,230 to 255,000	48,558 to 63,750	268	181-238
Freight engines 2-8-4... ...	170,180 to 180,160	42,545 to 45,040	257	166-175
Diesel 1,000 b.h.p. shunter ...	79,000	19,750	103	192
Diesel 600 b.h.p. shunter ...	60,000	15,000	80	188

Efficiency of Transport

TWO very interesting articles were published in *The Times* of June 4 and 5 on the subject of efficiency in transport. The writer commenced by pointing out that before the war public transport undertakings represented a capital investment of £3,500 millions, giving employment to 1½ million people, and that a great deal of work would be required to restore these assets, as the deferred maintenance figure for the railways alone is already £120 millions and that for roads £35 millions. Further, new motor roads are likely to cost £60 millions at pre-war prices and to electrify the main-line railways might cost something like £500 million. Although there is little likelihood of any such ambitious project as the electrification of the main-line railways being seriously considered in railway circles at present, the magnitude of the other figures provides ample justification for the writer's contention that, before the managements of transport undertakings embark on such heavy expenditure, they should be given an indication by the Government of the general pattern of public policy to which these developments should conform.

It will be recalled that the Minister of War Transport in the House of Lords on October 27, 1943, indicated in very broad terms that the guiding principle of the Government would be to provide cheap and efficient transport, and he defined "cheap" as meaning a transport system so co-ordinated and run that it can and does provide the best possible service for the least real cost to the community as a whole. This explanation clearly contemplated a comprehensive and co-ordinated transport development which would be self-supporting and charge accordingly, without subsidies to particular sections. "Cheap," of course, is only a relative term and, before the war, transport was often largely in excess of the highest demand, with the result that competition in rates ensued within the road industry itself and also between the various transport systems.

The railway rates structure has been built by Parliament on the assumption that the railways would be able to charge less for certain traffics (mainly affecting the basic industries, which are so important a factor in the national economy) and more for others, so that on the whole they would obtain a reasonable return on the total capital employed. The writer suggests that the inability of the railways to retain their higher rated traffic against their road competitors is due to the fact that their "track costs," that is, interest on capital and track maintenance charges, amount to about 34 per cent. of their total receipts as compared with about 13 per cent. in the case of passenger road vehicles (other than L.P.T.B.) and railway-operated road haulage, the latter figure being based on the cost of licence and petrol duties. The writer argues that unless the track costs of the several forms of transport are adjusted to a reasonably comparable basis, an increase in the charges on the low-grade basic traffic conveyed by railway is inevitable. He suggests three methods by which the difference can be overcome: the first is to raise public road transport track costs to the same level as those of the railways and canals. This would increase road charges and bring them nearer to rail rates for high-grade traffics, but it is pointed out that this proposal was unsuccessfully explored by the Salter Conference in 1932. A second method would involve an annual payment of about £20 million to the railways and canals after making allowance for the advantage they derive from the exclusive use of their tracks; this really proposes that part of the track costs should be borne by public monies, but would tend to keep charges at about their present level. A third course would be to pool all non-variable track costs for rail, road, and canal undertakings and defray them by an equal toll from all users of transport, leaving the non-variable costs to be met by open competition.

If, however, the problem of equalling track costs is found insoluble (and any such proposal would undoubtedly raise a good deal of controversy), the writer suggests that, if the charges on raw materials are to be protected, consideration might be given to establishing a community of financial interest among the different forms of transport, presumably by pooling competitive receipts and expenses. Co-ordination of the various forms of transport, it is claimed, is essential to secure that there is no large and wasteful superfluity of different facilities provided for the same service. Such co-ordination should aim not only at limiting transport services to a reasonable level relative to the demand, but also ensuring that, in all cases, the most suitable and economic type of transport would be selected.

It is assumed that this very difficult task of selecting the form of transport to be used would be delegated to the regional bodies mentioned below, but in any case it conflicts with the view of the Transport Advisory Council in 1937 that there should be an unfettered right on the part of the trader to select the form of transport which he approved and which is most convenient and economic for his purposes.

The writer then claims that if co-ordination is secured it would confer great benefits on the public, which would secure a common basis of fares and charges by all forms of transport, which fares and charges would be reduced to a minimum. This last phrase is nebulous, but the writer claims that the only justification for co-ordination would be that it provided the best and cheapest service. He admits that such a plan would involve the exercise of considerable monopoly powers by operators and, in this connection, it would not be possible to disregard the trader who operates road vehicles for the transport of his own goods, that is, the "C" licence holder, as his unrestricted vehicles might make a co-ordinated plan impossible. He suggests this difficulty could be overcome by granting licences for the transport of goods within a moderate radius of the trader's place of business, and bringing long-distance traffic under the control of authorities charged with the correlation of transport as a whole.

Some safeguards for the transport users would be essential and these could be achieved through the medium of the organisation created to supervise charges and facilities generally which, he suggests, might be effected by regional committees of operators and users. The work of these regional bodies could be co-ordinated by control committees of operators and users dealing with matters on a national scale. Provision would also be necessary for appeals, both regionally and nationally, and it would be necessary to introduce a general limitation of permissible profits for all forms of transport which would be calculated by the tribunals, possibly on the lines of standard revenues.

Although opinions may differ widely as to the desirability of some of these proposals, there will be general agreement with the final conclusions, namely, first, that there can be no workable plan for co-ordination without a heavy increase in the charges for low grade traffics unless track costs can be equalised or the receipts and costs of competitive traffic pooled; secondly, that regional co-ordination is entirely dependent upon the road haulage industry being organised in sufficiently large units to make such agreements manageable, and thirdly, there is a large amount of renewal and development work to be undertaken in all forms of transport which cannot possibly be planned or executed until the Government's policy for transport as a whole is made known.

* * * *

British Air Transport

IN the House of Commons on June 6, Mr. W. R. D. Perkins, Parliamentary Secretary to the Ministry of Civil Aviation, announced some important variations of the Government proposals in the White Paper (Cmd. 6605), which was reviewed in our issue of March 23. These proposals envisaged the creation of three main air transport corporations, one of which was to operate European air routes and internal services in the United Kingdom. The participants in this company were to be the railway companies, short-sea shipping lines, the British Overseas Airways Corporation, travel agencies, and such other pre-war operators as desired to participate.

Mr. Perkins announced, however, that the Government now proposed that any pre-war operator who was licensed to run an internal air line service in the United Kingdom shall be entitled to resume the services he was previously licensed to operate, provided he can satisfy the licensing tribunal that he is financially capable of operating the service, that he will comply with the welfare conditions applicable to pilots and crews, and that he will use British aircraft unless the tribunal is satisfied that suitable British aircraft are not available.

In addition, he stated that the Government now proposed to withhold from the new British European Corporation the right to operate air services from Scotland to the Scandinavian countries, including Denmark, and to reserve this right for Scottish air transport companies. A number of services in Scotland has been operated by Scottish Airways Limited and by Allied Airways (Gandar Dower) Limited, but Mr. Perkins made it clear that neither the railway companies, the British European Corporation nor the subsidiary company, Scottish Airways, would be allowed to operate services to Scandinavia. The right to operate these services would be reserved for Allied Airways (Gandar Dower) Limited, and any operators other than those excluded, who can satisfy the licensing tribunal it is proposed to set up, and who can come to some arrangement with the Scandinavian countries

concerned. The only reason advanced for this latter important variation of the Government's original proposals was that it will afford to Scottish enterprise an option and opportunity of operating those routes which are geographically most convenient, and will preserve the essential element of avoiding uneconomic competition between United Kingdom operators on the same route.

It is also of interest that, although the White Paper was published in March last, Mr. Perkins stated it had not been possible yet to settle the routes which would be assigned exclusively to the British European Corporation. He made it clear, however, that Prestwick Airport, near Glasgow, will be deliberately excluded from these routes so that the licensing authority could entertain applications from independent operators to run services from Prestwick to any part of the United Kingdom. He emphasised that it is an essential part of the Government's plan for overseas services that, to avoid uneconomic competition and the need of subsidies, the approved British operator shall have the exclusive right to operate on the route or routes assigned to him to the extent of the capacity authorised by inter-Governmental agreements. He then added the somewhat cryptic proviso that it would, however, be within the Government's power to assign routes to particular operators.

The totally unexpected exclusion of the British European Corporation from the operation of services from Scotland to Scandinavia, despite the fact that its subsidiary company, Scottish Airways Limited, operates the majority of the internal air services in Scotland, together with the equally unexpected intimation that the Government will retain the right to assign other overseas routes to particular operators, raise important issues which vitally affect the proposed constituent members of British European Corporation and may have far-reaching consequences. Under the White Paper the new Corporation will have to run services on assigned routes, whether they are lucrative or not, except in special circumstances, and it will be appreciated that the allocation of particular routes to operators outside the Corporation may prejudice seriously the chance of its operations proving remunerative.

So far as the proposed licensing tribunal is concerned, Mr. Perkins indicated that its functions would be to deal with public complaints as to the absence of reasonable facilities, undue preference, and the reasonableness of charges on United Kingdom air lines, as well as granting licences for routes not assigned to the main Corporation. The tribunal will be an entirely independent body, but will be asked by the Ministry to insist that British aircraft shall be used if available, that adequate provision is made for the welfare of the pilots and crews, and that the new operator is financially capable of carrying on the service.

* * * *

Progressive Systems of Locomotive Repairs

THE question is often asked whether the methods adopted in the locomotive works of the railway companies have kept pace with those progressive systems in the factories of commercial industry. The last ten years or so have brought revolutionary changes in manufacturing and repair methods, extending over a variety of products. Improved results have been obtained by organised planning with some form of time and motion study and a close analysis of all the factors connected with that particular item.

It can safely be said that some of the railway groups have gone a long way on such lines and in our April 13 issue was described the interesting system followed at an L.N.E.R. works, which represents a considerable stride in the technique of scientifically planned schemes as applied to the repair of locomotives.

It is interesting to recall that much of the pioneer work in progress planning was carried out by the former Lancashire & Yorkshire Railway at Horwich and the L.N.W.R. at Crewe works. At the latter place the institution of the Progress Office organised and run by several keen young assistants to the Works Manager, resulted in reducing, within a comparatively short time, the number of days taken to carry out general repairs to large engines by about twenty.

Based on the amount of interest on capital lying idle and on the very considerable capacity of Crewe Works, this reduction of twenty days represented in the course of one year a grand total worthy of notice. Yet the process did not stop there, for the management continued to make even greater improvements and ultimately introduced a form of " belt system " with even better results.

Recent attention directed to the subject has brought a most useful contribution from Mr. C. E. Fairburn, Chief Mechanical & Electrical Engineer, L.M.S.R., who, in a letter published elsewhere in this issue, gives some times for the repair of locomotives at Crewe works in normal circumstances.

A letter from a correspondent in our May 11 issue outlined the requirements for the rapid repair of locomotives; these suggestions are eminently reasonable. The early results on this important subject were obtained in a similar way and may be summarised as continuity of work on the locomotives; adequate spare parts; and a well-balanced repair system for material.

With these systems, a finished part store of considerable size is an absolute necessity and also the provision of spare boilers for each class of engine. The correct adjustment of the staff is of the highest importance, so that all items can go forward progressively, including repairs to frames and the reboring of cylinders.

The daily meeting of the essential foremen was an invaluable feature of the earlier days of progress planning but the importance of this tends to decrease as the system becomes more scientifically arranged and the various difficulties are smoothed out. There is no doubt that great strides have been made in some railway shops and the public knows too little of what has been done. It would be a matter of interest if the companies would describe what has been accomplished in the saving of time on building and repairs and so demonstrate that they are not behind the intensive and widely-advertised methods of some of the great factories of commerce.

* * * *

As We Were

WHEN crowded long-distance trains were still something of a novelty, optimistic persons expressed the view that travellers would find a new delight in each other's company. It was supposed that the customary search for an empty compartment would be abandoned, not because it had become futile but because it was unsociable. A casual glance at a station platform when a train comes in today might suggest that such a change in habits has occurred. Why, for example, do fifty persons attempt to force an entrance through those three doors, in the face of strong opposition from others within who wish to alight? Closer scrutiny will show that the doors in question are labelled in a manner that makes it plain to all who can read or count that they give access to first class compartments. It is no affection for the neighbours into whose ribs he is energetically jabbing his elbows that makes a man join in the scrum, but the unshakeable conviction that " there's more room in the firsts," and that there he will find seclusion. This conviction is particularly strong if he has purchased a third class ticket.

There has been little change, either, in the British traveller's attitude to eating in public. We recall that in Continental countries it used to be considered impolite to begin a packet of sandwiches without first offering them round the compartment. This picturesque custom was not infrequently quoted as one of the many things they did better abroad, and as a reproach to our own rough islanders who did not observe it. The point is, of course, that the Briton does not offer his sandwiches to total strangers because to do so is to admit that they look like the sort of people who eat sandwiches in the train, and, although we all have to do it nowadays, we still prefer not to advertise the fact. Around one o'clock in the afternoon a strange rigidity seizes travellers up and down the land. A thousand fingers pluck nervously at small white packets; by mutual consent the owners of the fingers avoid each other's eyes, and only the gentle rotation of a thousand jaws betrays the shameful fact that they are taking nourishment.

Listening to station loudspeakers is admittedly a habit that has grown enormously since 1939, and more reliance appears to be placed in the spoken word than in printed announcements, but the secluded and dimly-lit spots in which timetable sheets are displayed at some stations were much the same in peacetime and held similar attractions for the lover and his lass, who still appear to think it as odd that we should wish to consult the timetables as we find it irritating that they should drape themselves immediately in front of them. And having touched thus lightly on the borders of romance, it occurs to us that war seems not to have withered nor custom staled the infinite variety of the ladies who inhabit platform tobacco kiosks, before whose shrines the gallants still cluster at the twilight hour to the discomfiture of persons in a hurry to buy some cigarettes before their train departs, and where the soft glance and the whispered word belie the warning sign, " No Matches."

Road Accidents: Could Railway Methods Reduce Them?

By a Railway Inspector

THE reduction of road accidents is not the least of the major transport problems. For many years before the war there had been a yearly increase in deaths and injuries, and from 1926 to 1939 inclusive 92,873 persons lost their lives in road accidents and 2,680,568 were injured. Inevitably, to one concerned in railway safety methods the question arises: could any lesson be gained from railways?

The Government took the question of railway safety in hand as early as 1840 by establishing a Railway Department in the Board of Trade (the forerunner of the Ministry of Transport) and appointing Inspecting Officers, whose main job was to ensure that new railways were soundly constructed and properly equipped. These Inspectors also made searching inquiry into the causes of railway accidents with the object of preventing a repetition, either by improved equipment or revised regulations. Hence, the present safe-working organisation of the railways may be said to have grown up by a process of natural evolution guided by the Government Department. A similar department exists for building-up road safety measures and eight road accident Inspectors were appointed in 1937.

The Road and the Vehicle

In both road and rail movements the principal factors are: the road (the permanent way in railway terms); the vehicle; the driver; and the signalling system. Safety is adequately provided for in the official designs for new roads, and the problem of existing roads (mostly built before the motor vehicle era) is largely one of notifying approaching drivers of dangerous places, and thus is dealt with below under "signalling system."

The standard required by law for motor vehicles is satisfactory; but, on the whole, do road vehicles receive the same strict examination whilst in use as do railway vehicles? To bring road transport into line with railways, steps would be necessary to ensure that every vehicle on the roads is every day in a thoroughly efficient condition.

The Driver

Before appointment a railway driver has to pass a medical and eyesight examination, as well as a stiff test in knowledge of the railway rules and regulations; moreover, there is a periodical test to ensure continued proficiency. Are road drivers subject to the same searching tests? Would a higher standard for road drivers, and a periodical test, reduce accidents?

As conditions on the road are constantly liable to change immediately ahead of a moving vehicle (other vehicles entering or crossing, and pedestrian movements, etc.), it is a first essential that a road driver, who has a greater responsibility inasmuch as he steers his vehicle, should keep his attention alertly fixed on the road. Two points emerge here from the comparison: first, would it be preferable if the driver's compartment of all motor vehicles were shut off so he is alone and not subject to distraction, as, for example, taking part in a conversation? Second, the provision of a "dead-man's handle," which unless it were continuously pressed, would cause the vehicle to stop, might lessen the risks from drowsiness whilst driving.

Signalling System

So far the points brought out are designed to reduce risks and to make appropriate action effective, where such is required. But as many accidents are caused by drivers not having opportunity to stop in sufficient time, a fundamental factor will always be control of speed, or, in other words, a signalling system. On railways the danger points are fixed—the stop signals—and a driver receives a previous warning of when to be prepared to stop by means of a "distant" signal placed at braking distance from the stop signal. On roads, however, every inch may become a danger point by reason of (*a*) fixed dangers (sharp bends, narrow bridges, etc., and road junctions) and (*b*) vehicles overtaking, cutting-in, etc., and pedestrian movements.

The fixed danger points provide an almost perfect analogy with the railway, and the traffic lights and "Stop at major road ahead" signs are examples of railway principles successfully applied, but would it be an improvement if such danger points were protected (to use the railway term) by the equivalent of a distant signal? A prominent sign so fixed and illuminated in darkness as to thrust its presence on an approaching driver would meet the case. To prevent head-on collisions where there is an inadequate view ahead a physical obstruction enforcing "up" and "down" traffic into separate lanes would produce conditions similar to railway tracks. Although the other types of accidents, including those involving pedestrians, may occur anywhere (as they are not confined to fixed danger points) the areas within which they are most likely to occur may be defined, as populated areas produce the circumstances most probable to cause them. Railways impose a speed restriction on trains passing through busy stations and yards; and the question of a reduced speed limit on roads in towns and villages is worthy of consideration.

Enforce the Law

It cannot be over-emphasised that the splendid safety record of railways finally rests on the rigid enforcement of the regulations. Can a higher degree of road safety be reached unless the law is strictly administered (whether or not an accident occurs from an infringement) and penalties stiffened until they become real deterrents? It would appear there should be many more traffic police to deal with excessive speed (that is, not only exceeding the speed limit, but excessive in the light of the circumstances obtaining) irrespective of there having been an accident or not.

At first reading these ideas may seem drastic, but any system of regulation, when proposed, usually prompts this feeling. The test is: would accidents be reduced?

LETTERS TO THE EDITOR

(*The Editor is not responsible for the opinions of correspondents*)

"Highball"

Rodney Cottage, Bishops Lydeard,
Taunton. June 4

To the Editor of The Railway Gazette

SIR,—With reference to the note in The Scrap Heap relating to "highball," perhaps the word is not so American as might seem. At the opening of the G.W.R. to Reading in 1840 instructions to engine crew included: "A signal ball will be seen at the entrance to Reading Station when the line is right to go in. If the ball is not visible the train must not pass it—!" (Irish influence here?).

Perhaps some other reader can discover the link between the railway signal and the American drink—though at present prices and drought the research may prove expensive and prolonged.

Yours faithfully,
PETER HASWELL

Institution of Railway Signal Engineers

Great Western Railway, Signal Engineer's Office,
80, Caversham Road, Reading. June 6

To the Editor of The Railway Gazette

SIR,—I read with much interest the editorial article in your issue of June 1 entitled "A New Constitution for the Signals," and while fully endorsing everything you have to say, I nevertheless feel that you have passed over most cursorily the Institution to which you refer as having preceded the body incorporated on December 3, 1912.

The previous Institution of Signal Engineers was incorporated on June 13, 1910, under a council of management containing many names very well known in the signalling world, including the late Mr. A. T. Blackall, Signal Engineer, G.W.R., President; Mr. J. Sayers, Telegraph Superintendent, Midland Railway, Vice-President; the late Mr. R. J. Insell, G.W.R., Treasurer; Mr. C. B. Byles, Signal Engineer, L. & Y.R, subsequently Signal Engineer, New South Wales Government Railways, Secretary. In its short span of life, subjects of considerable current interest were dealt with in papers by Mesrs. A. H. Johnson (Signal Engineer, L. & S.W.R.), A. Hurst (Signal Engineer, N.E.R.), A. F. Bound (G.C.R.), and the writer.

The reason for this Institution coming to an abrupt end was on account of a legal flaw in its constitution, necessitating its reformation in 1912. Everything has to have a beginning and the 1910 Institution was, without doubt, the foundation body, the personnel and machinery of which was taken over lock, stock, and barrel by the Institution incorporated in 1912.

An un-incorporated "Institution of Signal Engineers" had been inaugurated before this, from February to June, 1910. This early history is recorded in some detail in the proceedings of the Institution of Railway Signal Engineers for 1938-9, and my object in writing this note is to endeavour to place the matter in some-

XUM

what better perspective than would appear from your otherwise worthy article, and not so much to criticise as to supplement it.

An interesting comparison of progress is that whereas at the earliest inception (1910) it was decided to exclude persons not in the railway service—a decision soon rescinded—in the new constitution practically no one is debarred from membership, provided that he can pass the prescribed examination or is otherwise qualified. *Tempora mutantur, nos et mutamur in illis.*

Yours faithfully,

G. H. CROOK
(Past President, Institution of Railway Signal Engineers)

Locomotive Cabs

Transportation (Br) Main, C.M.F. June 2

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I have been very interested in some of your more recent issues to see the prominence being given to the locomotive cab and in particular that of the latest "Merchant Navy" locomotives shown in the issue for May 18. I should like to point out, however, that the use of rear protection plates with windows to form "alcoves" for the driver and fireman is not new, as this has been standard practice on the Buenos Ayres Great Southern and Buneos Ayres Western Railways for the past 20 years. Those of the "Merchant Navy" class would not appear to be quite wide enough to afford the full protection desired.

There are several other points which in my opinion should be considered when designing cabs, and they are as follows:—(*a*) Drivers spend a very large percentage of time leaning out of the window and they should be provided with a padded or wooden window ledge to lean on as is done on the Egyptian State Railways; (*b*) A plate glass windscreen outside the cab windows as used on L.N.E.R. "A4" class and Italian State practice is a useful adjunct; (*c*) Hand-operated rubber front-window wipers should be fitted; (*d*) The placing of the steam fountain inside the cab is undesirable, as it causes considerable extra heat and incidentally blowing joints are very hard to re-make; (*e*) A central skylight in the cab roof to let out hot air is desirable; (*f*) The wooden floorboards so prevalent in cabs are continually wearing out and in my opinion should be substituted by a checkered steel footplate with raised wooden duckboards for the enginemen to stand on.

Finally, the tender arrangements on this "Merchant Navy" locomotive seem really excellent, and one can only wish that the whole space between side sheets and bunker had been used for water-tank doors as is normal German and Persian practice, thereby giving drivers about 20 ft. of latitude in making their water stops instead of virtually none.

It would be a good idea when designing new locomotives for a full-size wooden model of the cab to be constructed with all accessories; subsequently inviting criticism from, say, 25 drivers. One feels that if this were done regularly three would be a good many less burnt hands and blowing joints.

Yours faithfully,

W. L. TOPHAM
Co'onel

Smoking in L.P.T.B. "Non-Smokers"

215, Pitshanger Lane, Brentham,
Ealing, W.5. June 3

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I have been a season-ticket holder on the Central London Railway for over 30 years and also use the other lines of the L.P.T.B. a very great deal. I have never smoked, I hate the smell of tobacco—especially cheap cigarette tobacco—and for the last ten years for medical reasons I have to avoid tobacco smoke as much as possible and therefore invariably travel in a non-smoking coach or compartment.

It is almost unknown for me to take a journey without finding one or more—generally more—persons smoking in the "non-smoker." They are frequently people travelling for two or three stations only and sooner than sit down, although there may be empty seats, they prefer to stand just inside the doors. I have on several occasions called the attention of the Public Relation's Department of the L.P.T.B. to this and the lack of notices on the doors or inside the Tube coaches in the door lobbies but without avail, nor can I obtain an intelligible reason why they cannot be provided.

The point is that most people on the platform crowd round the doors as the train slows up and stops, and there is an appreciable space of time before the doors slide open; long enough to enable smokers in the crowd to see a "no smoking" label on the door, and give them time to get into the next carriage, invariably a "smoker."

As things are now they hop inside the door and stay there and if, as is often the case, during the rush hours, they cannot see up or down the coach they quite naturally cannot see the label on the windows. But they could see one placed on the door or on the "clerestory space" above the doors and not otherwise occupied by notices or advertisements. Yet while I have suggested this several times by letter and telephone to the L.P.T.B. they neither adopt the suggestion nor give an intelligible reason why they cannot do so.

To use the excuse of the paper shortage or staff shortage is ridiculous in view of the small extra amount of paper and labour involved, and it would be interesting if your valuable paper could elicit the views of a responsible official of the L.P.T.B. on the subject.

Yours truly,

"NONFUMIFER"

Rapid Repair of Locomotives

London Midland & Scottish Railway,
Watford. June 4

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Articles and correspondence which appear from time to time on the subject of locomotive repairs are often misleading when reference is made to days or hours under repair without sufficiently defining what is included in the period in question. The time taken to repair a locomotive can be shown in three ways, and the times indicated are those obtaining at the Crewe Works of the L.M.S.R. in normal circumstances:—

(1) Time actually spent in the Erecting Shop. This is an index of individual shop organisation and varies from 47 hours to 82 hours according to size of engine and type of repair, that is from 5½ to 9½ workings days.

(2) Time on works from entering the works' gate on being handed over from Motive Power until it leaves the works' gate again as a finished engine under its own steam. This is the true index of works' efficiency, and is the above figure plus (*a*) time in works' yard emptying boiler, undergoing preliminary examination, etc., before entering stripping pit, (*b*) time after leaving Erecting Shop spent in weighing, steam testing, adjusting, etc. This is from 10-14 working days, 12-17½ actual days, including non-working days (Saturday afternoon and Sunday). As, in this imperfect world, delays inevitably creep in from time to time, the actual time in works averages about 16 to 20 actual days.

(3) Time traffic to traffic, that is, the time between the last train worked before repair and the first train worked after repair. This is the indication of the loss to traffic due to the engine having to be sent in for repair, and because it is the general practice for engines to work trains *en route* to and from the Motive Power Depot adjacent to the works, the overall time is increased only to about 18 to 22 days.

Referring to the original article under the heading "Rapid Repair of Locomotives" in your issue of April 13, it is clear that your correspondent, Mr. Hunter, has not distinguished clearly between definitions (1) and (2) above. His arguments are all directed towards improving the time in the first of these, whereas the time mentioned in the L.N.E.R. article conforms substantially to definition (2) less item (*a*) therein.

I may point out that works' organisation to allow of days in shops such as I have indicated above, has been in operation on the L.M.S.R. for many years, and in this connection I would refer you to a series of articles appearing in *The Railway Engineer* in 1928 and 1929 describing the arrangements at Crewe, and in 1930, 1931 and 1932 covering those at Derby.

Yours faithfully,

C. E. FAIRBURN
Chief Mechanical & Electrical Engineer

Liverpool Street Station

12, Wellesley Mansions,
West Kensington, W.14. June 9

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Mr. George Dow is indeed fortunate if his relations with the press have enabled him to persuade it that Liverpool Street Station is Arcady. If Mr. Driberg's outburst has touched a tender spot on the broad back of the L.N.E.R. by evoking a rejoinder from Mr. Dow, it is more than generations of unfortunate passengers have succeeded in doing. A few yards of glazed tiles and a snack bar do not make a railway terminus.

To the traveller in a train approaching the station from Bethnal Green through the sulphurous catacombs of Bishopsgate, his journey's end must seem like the gateway to Tartarus. Operationally the place must be a railwayman's nightmare, punctuated by the double crow whistles of engines stalled on the bank.

The extremes of modernity and antiquity of the station are illustrated respectively by the fluorescent lighting in the booking clerks' offices and the blackboard stuck in an obscure corner of No. 10 Platform, used to indicate main-line train arrivals.

Let us earnestly pray that when electrification comes to Liverpool Street Station, improvement will not terminate at the buffer stops.

Yours faithfully,

BRANCHUS

The Scrap Heap

The longest locomotive run on the C.N.R. is from Winnipeg (Manitoba) to Jasper (Alberta), 1,037 miles.

* * *

WHAT'S THE UTILISATION?

Why ever use the hideous word utilise? Worse still utilisation. Why not always use the three-letter word use?—*A correspondent in "The Times."*

* * *

PRIORITY

There was, no doubt, a natural consternation among Britain's bureaucrats when VE-Day arrived. For the end of a war should mean not only an end to official privilege, but it should divest of all magic the word "Priority." What one of them could look unmoved on an event that threatened to reduce him to the level of the ordinary citizen?

While common mortals queued outside the platform barriers for hours before the train steamed in, this privileged person could take his ease in club or office. In due season, armed with emblazoned portfolio, black hat and umbrella, he could stroll into the street. A bemedalled commissionaire would commandeer a taxi, and usher him authoritatively in. To those who protested they too had been waiting long before he arrived on the scene, he would explain all with a wave of the hand and the single word: Priority!

At the station he would stroll to the head of the queue and whisper; and, lo, the gates would open to "Priority" as promptly as the treasure cave to Ali Baba's "Sesame."

While weary mothers hugged their whimpering children in the crowded carriages; and soldiers from the battle-fronts stood hour after hour in swaying corridors, the bureaucat could sleep soundly in his "Priority" berth.

Well, all that should have gone. But has it? Not at all. Not any more than the sight of "Priority" cars taking minor officials to lunch or the compulsory booking of "Priority" rooms and suites in hotels where ordinary folk try in vain to secure a bed for the night.

Personal privilege has no place in a democracy that is moving rapidly from the restrictions of war to the liberties of peace. It is a disease of war that has afflicted the whole nation; yet it stays lingering on. We must get rid of it. We must show the bureaucrat that he is the servant and we, the people, are the masters.

This is one more issue to remember on polling day; that a Socialist State means fresh hordes of bureaucrats, each with his "Priority" ticket to set him above his fellow men, to secure him ease in his travel and comfort at his journey's end. Let the resolve of the people be that never again shall the word "Priority" be allowed to defile the tongue that Shakespeare spoke.—*From "The Evening Standard."*

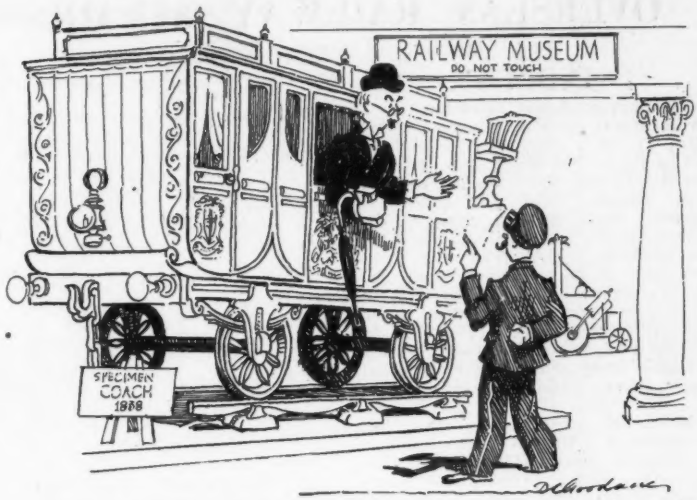
* * *

At the end of the war in Europe there were 20,165 names on the Canadian National System war service honour rolls: 582 employees have lost their lives; more than 100 have been decorated for gallantry.

* * *

VALUE OF THE POUND

On the basis of changes in the official cost of living index between 1914 and 1938, and 1944, the domestic purchasing power of the £, taking 1914 as 20s. was 12s. 10d. in 1938 and 8s. 4d. in 1944.—*The Chancellor of the Exchequer in the House of Commons.*



"They told me to change at York, but I must have got in the wrong train"

100 YEARS AGO

From THE RAILWAY TIMES, *June* 14, 1845

FURNESS AND WINDERMERE RAILWAY.

Consulting Engineer—George Stephenson, Esq., F.R.S.
Solicitors—Thomas Harrison, Esq., Kendal; John Cranke, Esq., Ulverstone.
Secretary—Mr. Thomas Hudson, Kendal.

In order to combine the interests of the Railway Companies and large landed proprietors in the Furness district with this Company, a new survey is now in progress, under the superintendence of Mr. George Stephenson, the result of which will be made public as early as possible.

May 32, 1845.

LONDON and BIRMINGHAM RAILWAY—Branch Railway from Watford to St. Alban's and Luton.

NOTICE—The Directors of the London and Birmingham Railway Company have directed surveys to be made of the country lying between Watford and St Alban's and Luton, and it is their intention to apply to Parliament in the next session for powers to make a Branch Railway to these towns.

By order,
R. CREED, Secretary.

Office, Euston Station, 12th June, 1845.

TAILPIECE

(The L.M.S.R. has announced a plan for interchange of its research staff with universities)

Mankind, by war's experience moved,
Agrees that things might be improved,
And that to reach a higher perch
The thing most needed is research.

We must develop and invent,
And lose no chance for betterment.
The sciences both old and new
Must open out—and transport too.

New thoughts must function, plans be laid,
And British railways lend their aid—
To find the true, expose the sham—
In league with Isis and with Cam.

E.C.

Ignominy, or the Engine that Failed

The above illustration is from a photograph sent us by Mr. S. C. Townroe

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

INDIA

Important Legal Decision

An important point of law was decided on May 11 in a case before a Division Bench of the Lahore High Court, consisting of Mr. Justice Abdul Rashid and Mr. Justice Khosla, when a decree of Rs.36,000 was passed against the Governor-General-in-Council, under the Fatal Accidents Act of 1855.

The facts of the case were that Mr. Wells, a fireman on the North Western Railway, met with an accident when 7 Up ("Karachi-Lahore Mail"), on which he was on duty, collided with a stores train being shunted into the relief siding at Mirpur Mathelo on December 10, 1937. Mr. Wells died of the injuries received in the accident, two days after the occurrence. Mrs. Wells instituted a suit claiming Rs.1,42,182 as damages against the Governor-General-in-Council. The lower court dismissed the suit, holding that the deceased was in common employment with Mr. Burke, the driver of the train, by whose negligence the accident had taken place.

Their lordships on May 11 held that the doctrine of common employment did not apply any longer after the Employment Liability Act of 1938.

UNITED STATES

New Rolling Stock

The Chicago & Eastern Illinois Railroad has placed orders for the rolling stock required to operate two streamline passenger services, one between Chicago and Evansville, Indiana, and the other between Chicago and Thebes, Illinois. From the Pullman-Standard Car Manufacturing Company ten lightweight vehicles have been ordered, including a dining car and a buffet car with lunch counter; and from the Electro-Motive Division of the General Motors Corporation, two 2,000-b.h.p. diesel-electric locomotives.

A joint order has been placed by the Pennsylvania Railroad, the Richmond, Fredericksburg & Potomac Railroad, and the Seaboard Railway for 48 streamline coaches of lightweight stainless alloy steel, for the joint services operated by these companies between New York and Florida, and New York and Birmingham, Alabama. The share of each company is roughly in the proportion of the mileage operated by each on the two routes concerned.

Turbo-Electric Locomotive for the Chesapeake & Ohio

The Chesapeake & Ohio Railway proposes to build three steam turbine locomotives larger than that of the Pennsylvania Railroad, and with the difference that they will use turbines to generate electricity, which will be used for propulsion. The power plant for each has been designed, and will be built, by the Westinghouse Electric & Manufacturing Company, in conjunction with the Baldwin Locomotive Works, which is to build the boiler and chassis. Each locomotive, which is to be of the 4-8-0 + 4-8-4 type, with uncoupled driving wheels, will have a streamline casing from end to end. In the nose, ahead of the cab, there will be the coal supply; the boiler will occupy the centre section; and the steam turbine and electric generators, with 4,000 kW capacity, will be at the rear end, followed by a 12-wheel tender to accommodate the water supply. The steam turbine is designed to develop 6,000 h.p., and the locomotive is expected to be capable of speeds of up to 100 m.p.h.

A statement has been issued jointly by the three companies participating in the experiment, in which they claim that marine experience has shown a substantially greater reliability, in sustained use, of the steam turbine over the diesel engine, and express the expectation that maintenance costs relative to ton-mileage should be considerably less than for the equivalent diesel power. It is pointed out also that the locomotive will use coal—"the nation's cheapest and most abundant present and future source of energy."

These three turbo-electric locomotives are intended for use on the two sections of a streamline passenger train which the Chesapeake & Ohio Railway plans to inaugurate as soon as labour and materials are available for the building.

Northern Pacific Cut-off

Approval has been recommended by its examiner to the Interstate Commerce Commission of the proposal of the Northern Pacific Railway to construct a line between New Salem and Kwitz, North Dakota, 16½ miles long, at a cost of about $2,735,200. This would form a part of the main line from Minneapolis to the Pacific coast, and, it is intended, would replace the existing line through Almont, which is so circuitous that the new route would economise 9·3 miles.

Local interests endeavoured to obtain an order on the railway to continue the operation of 12 miles of the old route, as a branch to serve Almont, but the examiner did not consider that there would be sufficient traffic remaining to justify any such compulsion; and it is recommended that the old route be abandoned.

DENMARK

State Railways in 1943-44

Working receipts of the Danish State Railways for the year ended March 31, 1944, totalled 314,200,000 crowns or 30,200,000 crowns more than in the preceding year. The working expenditure was, at 232,900,000 crowns, higher by 26,700,000 crowns. Depreciation amounted to 74,300,000 crowns, partly on account of higher wear and tear of rolling stock and plant, partly to cover new plant purchased at higher prices. Interest absorbed 11,800,000 crowns and there resulted an unfavourable balance of 4,800,000 crowns compared with a surplus of 4,600,000 crowns for the 1942-1943 working year.

The increase in the working receipts was largely due to expansion in the carriage of fuel and also to the increase in passenger fares. In this connection it is pointed out that the period under review comprised two Easter traffic sales, *i.e.*, the entire advance sale of holiday tickets for Easter 1943 and part of the advance sale of holiday tickets for Easter 1944.

The working expenditure was affected by the expansion of traffic, the wage supplements granted to personnel, allocations in connection with special work and the higher wages paid to emergency workers.

In the year under review 79,200,000 passengers were carried, 8,900,000 more than in the preceding year, an increase of 12·7 per cent. Passenger receipts totalled 138,600,000 crowns (19,700,000 crowns or 16·6 per cent. more). Luggage receipts aggregated 4,700,000 crowns (3,600,000 crowns), an increase of 29·9 per cent., the number of articles of luggage conveyed having risen from 2,139,000 to 2,441,000 in addition to the carriage of 1,895,000 bicycles (1,403,000).

Goods Traffic Expansion

The expansion of goods traffic was mainly due to the increase in the carriage of fuel. The goods traffic totalled 13,400,000 metric tons, an increase of about 1,900,000 metric tons, and goods receipts at 152,100,000 crowns compared with 144,000,000 crowns, an increase of about 5·6 per cent. The expansion of goods traffic was in respect of full wagon loads, parcels consignments and livestock.

Amongst full wagon loads, peat accounted for the highest increase (529,500 metric tons or 45 per cent.), brown coal consignments showed an increase of 275,900 metric tons (or 16 per cent.), cereals and root crop totalled 91,800 metric tons more (10 per cent.) while constructional timber decreased by 104,100 metric tons. Consignments of earth and stones were lower by 88,600 metric tons, fertilisers diminished by 47,200 metric tons, consignments of sugar contracted by 44,900 metric tons and metals and metal articles totalled 41,600 metric tons less.

Receipts and Expenditure

Receipts in respect of mail traffic were higher by 708,000 crowns, an increase of 8·6 per cent. Miscellaneous receipts totalled 600,000 crowns more, an increase of about 6 per cent.

With regard to the increase in working expenditure, the portion relative to the higher consumption of coal, as well as to higher prices of coal, lubricants, firewood, peat and electricity, accounted for 1,200,000 crowns.

Wages and salaries rose by some 3,700,000 crowns, not including those paid to emergency personnel (including workshop labour and bus personnel) which increased by a further 6,800,000 crowns. The personnel, including emergency personnel, numbered 26,261.

At the end of the year under review the system of the Danish State Railways totalled 2,391 route-kilometres (1,484·8 route miles) of which 600 kilometres (372·6 miles) were double track and 17 km. (10½ miles) quadruple track. Bus routes of the Danish State Railways totalled 3,074 kilometres (1,909 miles), but of this total, lines in operation aggregated only 2,300 km. (1,428 miles).

Rolling Stock

Although the rolling stock had been increased by 331 wagons it proved impossible to meet fully all requirements. In fact, the shortage of rolling stock was more than double that experienced in the 1942-1943 working year. The number of full wagon loads increased by 103,000 (9·6 per cent.), and it is stated that no rolling stock has been loaned to other countries.

Train-kilometres were, in 1943-1944, lower by 4 per cent. compared with 1942-1943, but as against the last full pre-war working year (1938-1939) the decrease amounted to 28·1 per cent.; ferry-kilometres decreased by 7 per cent. and 37·3 per cent. respectively. Passenger train figures expressed in train-kilometres were, in 1943-1944, 59·5 per cent. below the 1938-1939 schedules. The utilisation of passenger accommodation expanded from 56 per cent. to 62·3 per cent.

As far as accidents were concerned, four passengers were killed and 21 members of the personnel were killed by accidents while on duty.

Recent Signalling Developments—3*

Pre-war progress in Great Britain, with some indication of how the latest technical developments might be applied to post-war traffic problems

By O. S. NOCK, B.Sc., A.M.Inst.C.E., A.M.I.Mech.E., M.I.R.S.E.

IN considering the possible use of C.T.C. in British railway signalling practice it is necessary to keep in mind the quite different operating conditions that exist in this country. No useful result is likely to come from attempts at a mere adaptation of American methods; the basic remote-control principle on which C.T.C. is built up, however, can be readily applied within the framework of existing British railway operating practice to secure increasingly-efficient control of train movements. There are, of course, a number of routes in Great Britain that do lend themselves to the adoption of C.T.C. in the form most widely used in America—the working of long stretches of single line, as exemplified by the remarkable installation on the Western Pacific Railroad, described in *The Railway Gazette* for October 22, 1943. The main line of the L.M.S.R. between Inverness and Wick is a case in point. But even here, although traffic conditions are somewhat similar, and though regulation no doubt would be greatly improved by the installation of a C.T.C. control machine to cover the entire 161 miles of route, there is yet an essential difference between the American and British cases: this "farther north" main line of the one-time Highland Railway is fully signalled, and moreover equipped with the Manson tablet-exchanging apparatus, whereas the section of the Western Pacific Railroad referred to had no signals at all before the installation of C.T.C. Against the operational advantages, and the elimination of some fifty signal boxes, would have to be set the installation of continuous track-circuiting through 160 miles of sparsely-populated country and the provision for maintenance of the track circuit and C.T.C. equipment.

It is rather in busier areas that C.T.C. is more likely to prove of value on British railways. Fig. 6 herewith shows a typical stretch of main line, where sections of double track can prove to be serious bottlenecks unless the flow of traffic is carefully regulated. In this hypothetical case two important routes converge at Junction "A"; between this point and a large traffic centre "Z" the line is double-tracked for nearly 12 miles, though this length includes two running loops. The traffic is mixed:—

(*a*) Heavy express passenger trains to and from both routes converging at "A," making no stops in the section illustrated, and running at speeds up to 90 m.p.h.

(*b*) Fully-braked express goods trains to and from route "X" (at Junction "A"), maximum speed 60 m.p.h.

(*c*) Heavy mineral trains from Route "Y" (at Junction "A") and corresponding trains of empties in the reverse direction.

(*d*) Partially-fitted through goods trains to and from route "Y" (at Junction "A").

(*e*) Intermittent service of passenger trains calling at all stations in the section illustrated.

(*f*) Branch service of passenger trains terminating at Junction "D" in the bay road.

(*g*) Occasional mixed-goods and mineral trains from the main line to the branches at both Junctions "D" and "F."

(*h*) Slow main-line goods trains picking up or setting down traffic at stations "B," "D," or "G."

Route "X" leads from a large seaport handling important ocean traffic, both passenger and goods; and although a number of conditional paths are laid down in the working time table for the accommodation of these trains, their actual running times are apt to be dependent, to a certain extent, on the arrival of ships. Also, to avoid congestion in marshalling yards on route "Y" it is desirable that mineral trains travelling thence should be accepted without delay. Thus it will be appreciated that careful regulation is often necessary to keep all grades of this diverse traffic running as near as possible to their full scheduled speeds.

Centralised Control.—With manual block signalling ten signal boxes would be necessary, at locations "A" to "K" inclusive. With the exception of station "G" every one of these locations has an important function to fulfil in the control of the main-line traffic, and each would be in direct telephonic communication with the District Control Office. "Control" is furnished with reports giving the time at which each train passes certain key signal boxes, and from these reports can keep in touch with the general traffic situation on any particular section of line; with the situation as thus presented in view, instructions are given by telephone to the individual signal boxes concerned when some alteration to the regular procedure laid down in the working book is deemed necessary. Inevitably, there is a definite time lag between the actual movements of trains, the transmission of reports to Control, and the issuing of special instructions to meet a particular local situation. Usually, too, several signal boxes will be involved, so that a corresponding number of instructions have to be sent out. In an area such as that illustrated in Fig. 6, the workings at the various signal boxes are interdependent, and if all main-line movements in the area were brought under the control of one signal box the operation generally would be better co-ordinated. Furthermore, the work of the District Control office would be simplified through having to deal with only one, instead of ten, signal boxes.

Such centralisation of control in a critical area is possible with C.T.C. In drawing up a signalling scheme it is important to ensure that the traffic controller, or signalman who would be in charge of the control panel shall be free to devote his whole time to the directing of through traffic. To this end the number of switches he has to operate are reduced to the absolute minimum, and a comprehensive system of track-circuit indications shows the exact state of the line at any instant. With continuous track circuiting throughout there is no need for equivalents of the distant, home and starting signals associated with manual block; multi-aspect colour-light signals would be used, and, following the practice adopted on the L.N.E.R. main line between York and Northallerton, the

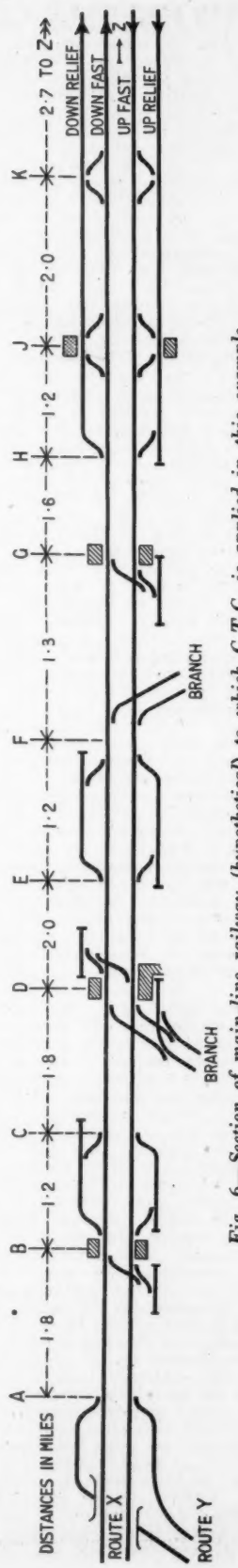


Fig. 6—Section of main-line railway (hypothetical) to which C.T.C. is applied in this example

* Part 1 appeared in our May 18 issue and Part 2 in our June 1 issue

main running signals would be spaced so as to provide a uniform headway between trains. With the track layout illustrated in Fig. 6 the signals can be conveniently spaced at about one mile apart, and would permit comfortably of a headway of three minutes between trains travelling at 60 m.p.h. For the purpose of this example it has been assumed that the section of line between "A" and "K" is level; if there were abrupt changes in the gradients, or if there was a general rise in one direction of running the spacing of the signals would have to be modified to provide the uniform headway desired. In the running loops extending from "B" to "C," and also between "E" and "F" traffic would be slow moving, and to permit of two trains using each loop simultaneously intermediate signals are included. The running signals are all three-aspect.

The C.T.C. Scheme.—For the purpose of this example it is assumed that the C.T.C. control machine is at Junction "A." It is not desirable that the controller, or signalman in charge of this machine should have to concern himself with the local shunting that would occasionally be necessary at stations "B," "D" and "G," and accordingly the crossovers leading to these sidings are controlled by ground frames. The main-line signals reading over these trailing connections, as at "G" for example, normally operate as automatics. The only signals regularly operated from the C.T.C. control machine are those relating to definite running movements—the entry or exit from loops, or cross-over moves from main to relief, or *vice versa*, on the four-track section from "H" through "J" and "K." The various shunt signals for local movements at "B," "D" and "G" would be operated from the ground frames concerned. At Station "D" the branch passenger-train service, which is worked in and out of a bay platform, would be signalled locally as required, and because of the very infrequent use made of the main-line connections to the branch the signals reading over the points in question would be arranged to work normally as automatics. Thus it is on rare occasions only that the signalman at "A" would have any need to concern himself with operations at "D."

With the signalling as thus arranged, there would be only 22 switches for signals, and 24 switches for points on the C.T.C. control machine. In addition, there would be 6 switches for the release of the local ground frames at "B," "D" and "G." When, for example, a train on the up road at station "G" has shunting to perform, only the "up" ground frame needs to be released, and the down-line signal on the approach side of the station can continue to function automatically; shunting from the down line requires the release of both ground frames. This instance of local shunting provides a good example of the benefits to be derived from the use of C.T.C. The controller or signalman at "A" will be duly advised by his District Control when any shunting is to be done at wayside stations, and the fact that he, and not the local stationmaster, has to authorise the use of the crossover roads makes it certain that due thought will be exercised before such goods trains are permitted to leave the loops and proceed to station "G," as while shunting is in progress one, or both, main lines will be blocked. Further, if any shunting becomes unduly protracted and is likely to delay important trains, instructions can be given to stow the whole train in one

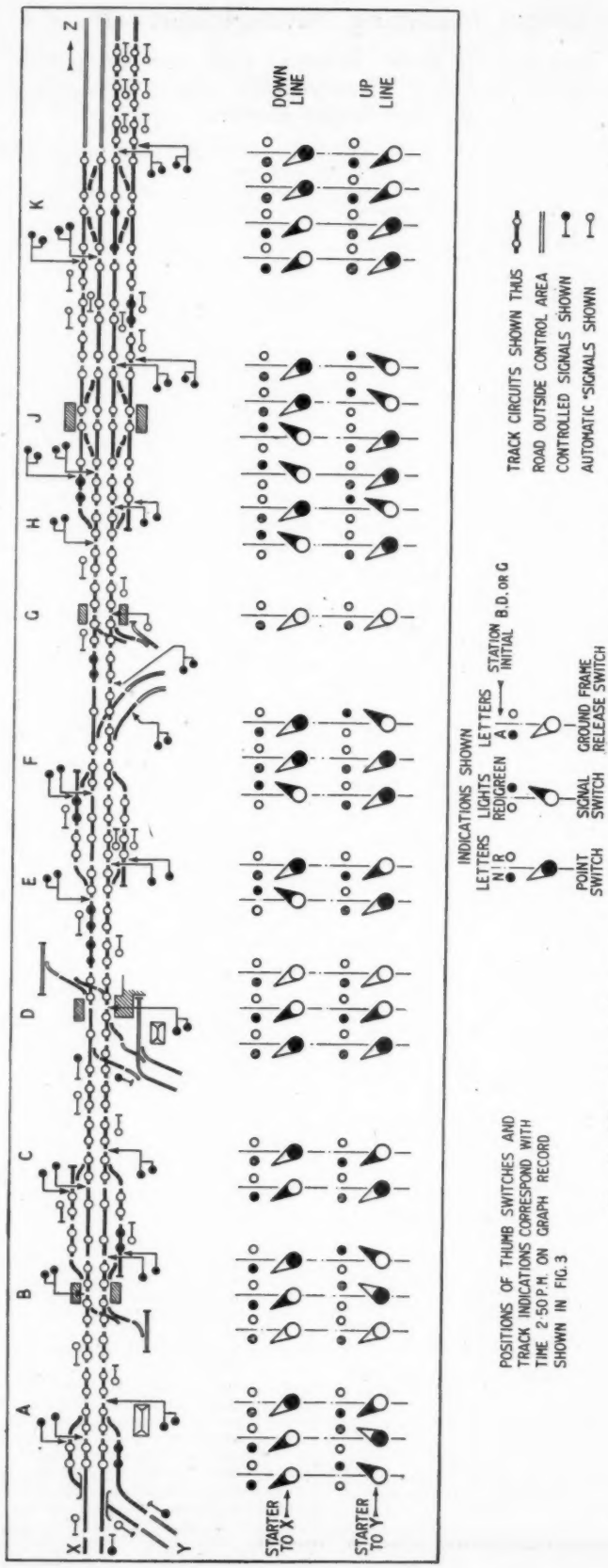


Fig. 7—Illuminated diagram and operating panel C.T.C. control machine Section A—K

of the sidings so as to clear the main lines. Ordinarily the express-passenger, and the fully-braked express goods trains would use the through lines, though in the down direction the working of the latter class of train would depend on whether the large traffic centre, "Z," could accept and clear them at once. It might be necessary to turn such trains on to the relief line at "K," when an express passenger, or group of expresses, was following shortly, to avoid the chance of delaying the latter.

With the whole stretch of line from "A" to "K" set before him on the illuminated diagram the controller or signalman at "A" is in a highly advantageous position to supervise all train movements. From his experience he knows the running times of the various classes of traffic, and can, for example, judge when there is sufficient time to allow a heavy mineral train to proceed from "F" to "H," without the chance of its delaying a following express passenger train.

Turning now to engineering details of the scheme, the control panel might, for ease of operation, be built in three sections; the two outer ones would be at an angle to the centre unit. The representation of the track layout on the illuminated diagram would be necessarily diagrammatic—a typical form is illustrated in Fig. 7. The repeating of the track circuits follows normal practice in that occupancy of the overlap tracks is not separately indicated; the diagram lights are illuminated when either the principal track circuit leading to a running signal, or the succeeding overlap track, or both are occupied. In this particular layout there are nearly 100 track circuits to be repeated on the panel diagram. For the control and indication of all the signalling apparatus there would be required only two line wires.

So that the working in the C.T.C. area can be properly co-ordinated with that on the sections of line converging on it, due consideration must be given to the means of linking up with the adjoining signal boxes. On the main routes "X" and "Y" ordinary manual block working, with the standard bell code for train description would probably meet all requirements; the same applies to traffic to and from the branch joining the main line at "F." There is, however, no need for the signalman at "A" to be concerned with block working in connection with branch passenger trains terminating in the bay platform at "D"; this can be handled locally. With trains proceeding to or from the main-line direct on to the branch, their movement so far as the main-line connections are concerned would be controlled by the signalman at "A," in consultation with the local station-master; once clear of the main line, station "D" would be responsible for block working in collaboration with the first block post on the branch. In linking up with the large traffic centre "Z," it would be necessary for both the class and route of each train to be described; train describers would have to be installed, if a lot of telephoning is to be avoided.

In the Control Offices on some railways it is the practice to keep graphic records of train running. The Controllers plot the various paths as reports of traffic movements are received by telephone. The complete track-circuiting of the line that would accompany an installation of C.T.C. makes it possible to record automatically the passage of trains at certain selected points. The diagram in Fig. 8 illustrates a portion of a graphic record that might be taken on the section of railway under consideration in this article. The recorder is fitted with a number of electrically actuated pens; the working of each is controlled by the occupancy or otherwise of a certain track circuit. When a track circuit becomes occupied the pen concerned is deflected to the right and so makes a distinctive mark on the chart, at the appropriate time.

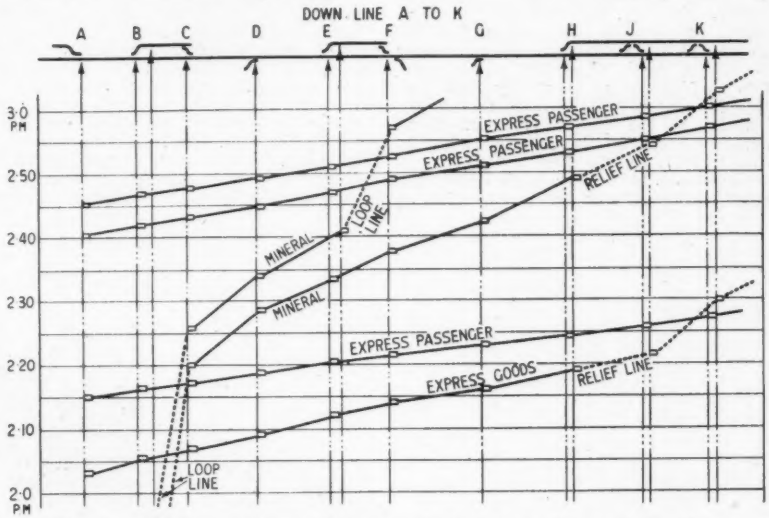


Fig. 8—Specimen of graph record relating to traffic on down lines during one hour

The chart is continuously moved on electrically-driven rollers so the passage of trains as registered by the deflection of the various pens is recorded at the correct time of day. Thus all the signalman, or controller, has to do to plot the path of a train is to join up the various deflection marks on the graph. Where a train is diverted to a loop or to the relief line its path may be distinguished from those of trains using the main line either by a dotted line, as shown in Fig. 8, or by the use of a coloured pencil.

(To be continued)

RAILWAY CONDITIONS IN CEYLON.—Eight heavy Beyer-Garratt locomotives, specially designed for work in the hilly central districts of Ceylon, are expected shortly in the island. Their arrival will ease considerably the goods traffic position of the Ceylon Government Railway. At present there is only one such engine in the island.

An order has also been placed for a number of carriages. No information, however, is yet available as to when they are likely to arrive in Ceylon. Many of the railway carriages now in use need attention. The brass and plated fittings, hat racks, and even wash basins in many of these coaches have been removed or stolen.

Some of the staff employees of the Malayan railways, whose services were temporarily engaged by the Ceylon Government Railway at a time when the latter was suddenly called upon to convey an unprecedented volume of passenger and goods traffic, are leaving the island shortly.

The railwaymen from Malaya arrived in Ceylon shortly after the fall of Singapore and Malaya, three years ago, and their services were readily accepted because of their experience and the urgent need for administrative officers to deal with the heavy volume of traffic with the inadequate material available at the time. This period also coincided with the selection of Kandy as the headquarters of the South-East Asia Command. In addition to the heavy passenger and goods traffic the railway was also called upon during this period to transport the foodstuffs and the livestock of the Civil Defence Department all over the island.

One man was killed and nine others were injured at Mount Lavinia, near Colombo, when the open door of a railway carriage struck against a train that was proceeding in the opposite direction. Most of the injured men were travelling on the footboard at the time. Because of the heavy traffic on the railway, a large number of passengers, especially of the third class, travel on the footboards of trains and accidents of this nature are frequent.

DUNLOP WAR PRODUCTS.—At the Royal Empire Society, Northumberland Avenue, London, on July 2, Sir George Beharrell, will open an exhibition of novel products, many of them recently released from the secret list, made for the war by 35 factories of the Dunlop Rubber Co. Ltd. in Great Britain, Australia, Canada, India, and South Africa.

"PERSPEX" SHEET MATERIAL.—Manufactured by the Plastics Division of Imperial Chemical Industries Limited, the transparent methyl methacrylate material known as "Perspex" is now released for civilian applications. As an aircraft glazing material, it has stood the test of outdoor exposure for five years without deterioration and has been used for lighting fittings, machinery guards, button manufacture and the production of articles of domestic equipment. The moulds for shaping "Perspex" can be made by the methods used for ordinary wooden pattern-making, and it can be cut, drilled, and worked with ordinary wood-working tools.

XUM

Sectioned Perspective View of Locomotive Front End

A notable drawing of L.M.S.R. class "7P" 4-6-2 locomotive of the latest type

WE are glad to have this opportunity of publishing (by courtesy of Mr. C. E. Fairburn, Chief Mechanical & Electrical Engineer, L.M.S.R.) a remarkable drawing by Mr. V. C. Stockton, one of the L.M.S.R. technical staff at Derby, showing the front-end arrangements of one of the latest Pacifics. It is hard to imagine any manner in which such a wealth of information could be more effectively displayed; the drawing is all the more remarkable because of the judgment exercised in deciding what to include and what to leave out. In the result, we see an achievement of a very high order; the great ability shown in its execution is borne out by the clarity with which the operation of the various details becomes evident, and the extraordinarily small space required for conveying, in pictorial form, so many related facts.

To anyone reasonably familiar with the working of the locomotive the drawing furnishes a most convenient summary of the best British practice of today. No doubt to the layman without engineering knowledge it may appear formidable; and indeed there is some reason for such an impression. If a similar chart (to the same scale) of a locomotive of 100 years ago were placed beside that of Sir William Stanier's creation it would give a most instructive commentary on the gradual—at times almost imperceptible—progress in locomotive design during that period. One detail after another has passed from the crude early empirical state to its equivalent in the highly-finished machine of today.

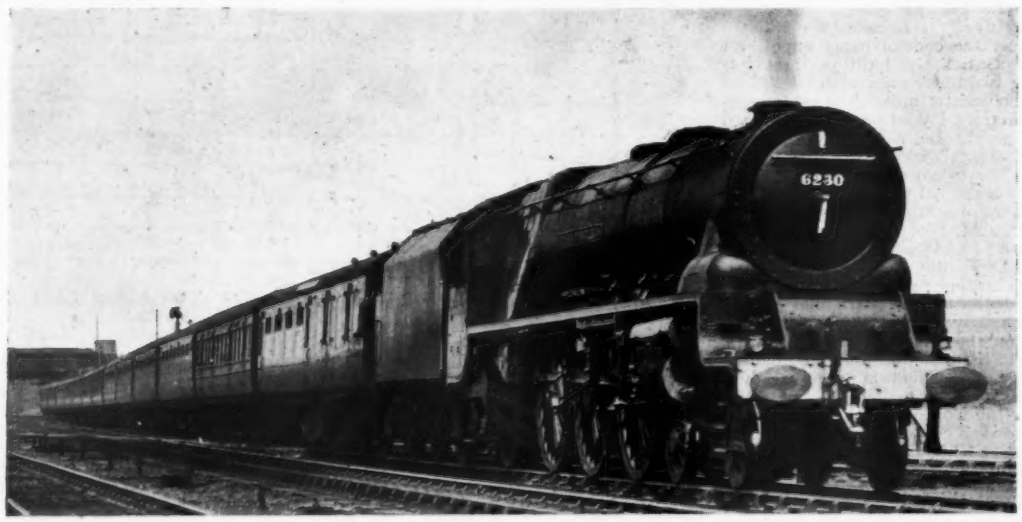
It is refreshing to turn to this perspective drawing, with its highly effective visual presentation, after studying conventional drawings of locomotives and overloaded "general arrangements." Here are no details that are not needed for the presentation of the subject. No dimension lines block the view, no centre lines get in the way; and there are no extra projections or detailed views to distract. With great skill, details which are not important in the main purpose of the drawing have been greatly simplified (for example, the buffers); subtle ingenuity has been shown in indicating the continuation of the circular front of the smokebox by a single thin line, which preserves the illusion that we are looking into a locomotive made partly of glass and yet gets in the way of nothing. Lubrication details wisely have been omitted.

With the aid of this drawing, the whole process of what happens in the front end of a locomotive can be followed easily. The injector delivery pipe begins the story, with the associated sheet metal trays above the boiler water level; we pass on to the regulator and superheater details and the layout of the branching steam pipes serving the four cylinders. The presentation of the valves and pistons must have been a matter of great difficulty, but it has been solved triumphantly; and there is an excellent view of the exhaust passages leading to the double blast pipe.

If any doubt should exist as to the use of such a drawing, in view of its non-conventional, perspective, layout, we would suggest that, reproduced on a large scale, as a wall diagram, perhaps with certain parts distinctively coloured by a light wash, it would be of the very greatest assistance in instructional classes for locomotive men; and technical schools and university colleges, particularly those in districts closely associated with railway engineering, certainly should possess copies. As to instructional classes, the idea lends itself to further exploitation: injectors, brake systems and brake rigging, methods of suspension, water pick-up gear, would form suitable subjects for more detailed drawings; a general view of the firebox, with ashpan and dampers, firedoor, deflector plate and brick arch, and some of the tubeplates, as well as the roof stays and side stays could be made very effective in telling the story of the combustion process in the locomotive.

Finally, we may mention the skilful use of light and shade in the original Derby drawing, from which our illustration was reproduced. This, with a judicious gradation of the thickness of the lines themselves, with regard not only to their position but also to their relative importance, has resulted in an appearance of solidity just where it is required, and gives the illusion that one is looking at an actual model rather than a two-dimensional representation only. We offer our congratulations on the completion of this most successful achievement.

(*See folding plate, p.* 596A)



L.M.S.R. Pacific locomotive No. 6230 "*Duchess of Buccleuch*"

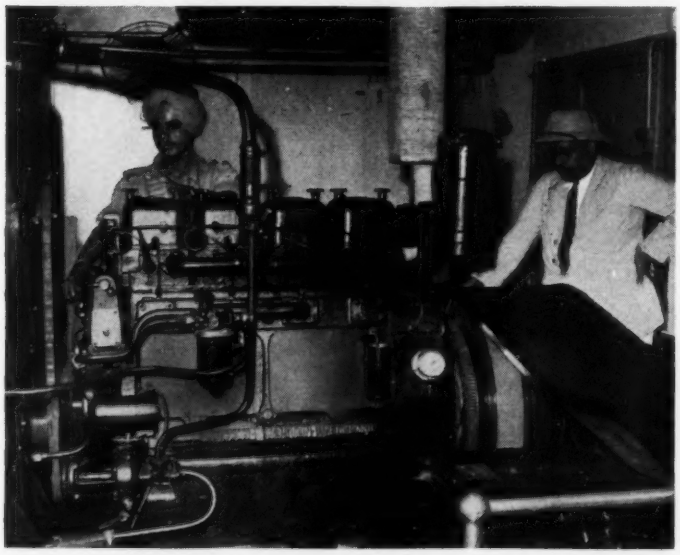
WELDING UNDER WATER.—The advantages of being able to carry out electrical welding under water will be obvious; repairs to ships, bridges, dock installations, piers and pipelines all call for its application. The Peillon electrical welding process, operated by Under Water Welders & Repairers Limited, of 52, Leadenhall Street, London, E.C.3, is based on the fact that an electric arc can be struck and maintained in water. From the moment the arc is struck (in water) it creates for itself a shield of metallic vapour and can be used for welding as though in the open air. Details of the process are set out in a 6d. booklet issued by the company under the above heading.

CLOSING OF LAMESLEY STATION—Lamesley Station, L.N.E.R., was closed for passenger and parcels traffic on and from June 4. Parcels traffic previously dealt with at Lamesley will be forwarded to Birtley, from which station it will be delivered by the company's road motor vehicles.

Air Conditioning of Trains in India

Indian railways are providing air-conditioned ward cars for broad- and metre-gauge ambulance trains

By P. R. Agarwal, B.Sc. (Eng.), M.I.E. (India),
Deputy Director (Mechanical Engineering) Railway Board



Engine generator unit in power car

AS the increase in the importance of India as a base for allied operations against the Japanese seemed imminent, it was decided by the adjutant-general, in May, 1942, to air-condition two ward cars of each of the ambulance trains on the broad- and metre-gauge lines. This was considered necessary for the health of patients of the Allied armies, especially for cases suffering from heat-stroke.

Because of the difficulty of obtaining ice and electric current for pre-cooling air-conditioned units, not running between fixed points to a pre-determined schedule, and the likelihood of such units having to stand for long periods, it was decided that the electro-mechanical system of air-conditioning would be more suitable than the ice-activated system. The former system, therefore, was adopted for ambulance trains.

Indian railways already had experience of the electro-mechanical system of air-conditioning for passenger coaches and it therefore was arranged that the equipment for the ambulance trains should be made by the previous suppliers. To allow for prolonged halts and operation over any routes without restriction, it was necessary to depart from the conventional axle-driven generator for the power supply, and to arrange for a mobile power unit to be operated by a prime-mover included in the rake of each train. The diesel engine was selected as the only form of prime-mover suitable for this purpose.

The air-conditioned units consist of:—

(*a*) 5/6-ton air-conditioning roof unit, Carrier Engineering Co. Ltd. type, mounted on the roof of each ward car, including motor-driven fan for circulation of the air;

(*b*) Refrigerant compressor, together with its driving motor carried on a bracket, mounted on the underframe below each ward car;

(*c*) Refrigerant condenser-unit, of 7-ton capacity, mounted together with its fan and driving motor on a bracket suspended from the underframes below each ward car;

(*d*) Starting panels and air-conditioning control panels with voltage regulators mounted inside each ward car.

The power unit for generating the current for these ambulance trains consists of a diesel engine and electric generator in duplicate; one set is kept in reserve as a standby and is housed in a separate 8-wheel coach attached to the air-conditioned ward cars, and the complete triple units are attached to an ambulance train in the rear. The diesel engines are of the Ruston 40-b.h.p. solid-injection cold-starting vertical cylinder type, running at 1,000 r.p.m. coupled by multiple V-belt to a Tonum electric generator, open ventilator type, 48/56/64 volts, 24 kW. at 1,250 r.p.m. with necessary generator-control panels. The diesel engines are provided with electric starters operated from separate 12-volt starter batteries, with provision for starting by hand also, if necessary.

The main supply of fuel is carried in tanks below the floor level of the generator car, and is pumped by hand-operated semi-rotary pumps to service fuel-tanks from which it reaches the engine by gravity. A central switchboard is provided in the generator car to control the supply of electric energy for battery charging and for operating the air-conditioning equipment in the ward cars. An electric storage-battery also is provided and both the sets can be shut down together for short periods.

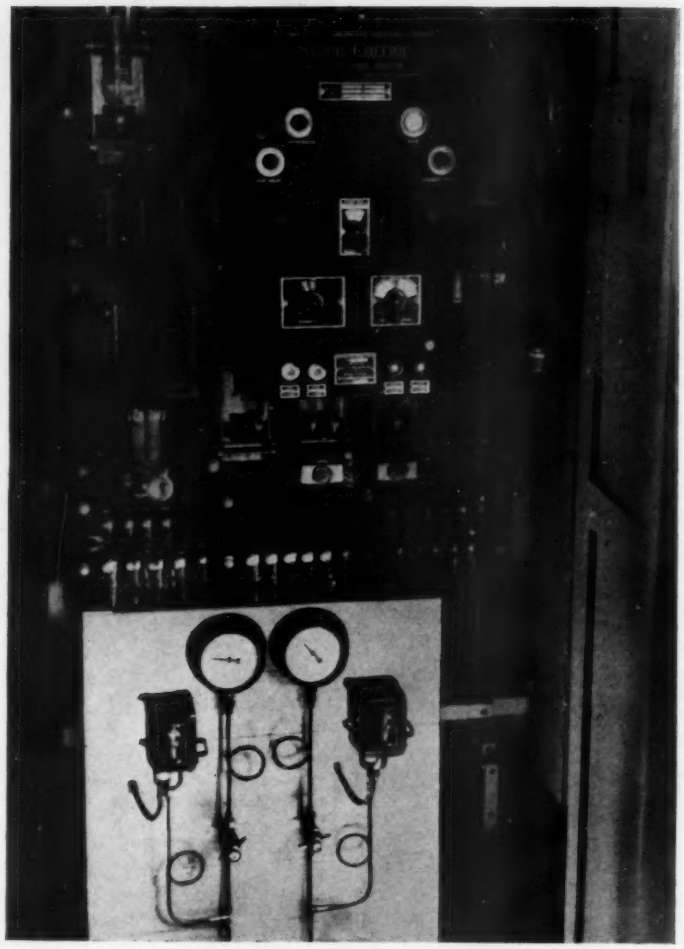
The importation into India of the prime-mover and the generating and air-conditioning equipment was arranged from the U.K. and the U.S.A. by J. Stone & Co. Ltd. The designs of the ward cars were carried out

Interior of a broad-gauge air-conditioned ward car

by the Central Standards Office for Railways, Railway Department, and the building of the broad-gauge and metre-gauge ward cars and generator cars was done by the G.I.P. and B.B. & C.I. Railways respectively. Each broad-gauge and metre-gauge car has a carrying capacity of 28 and 20 berths respectively.

The maintenance of the generating and air-conditioning equipment is the responsibility of the War Department, and each triple unit is staffed with one British warrant officer, and two Indian other rank fitter drivers. Suitable staff selected by the adjutant-general's branch were given eight weeks' training in the E.I.R. workshops at Lillooah in the maintenance of the electro-mechanical air-conditioning equipment of the G.I.P.R. and E.I.R. passenger vehicles in service on the Howrah-Delhi and Howrah-Bombay sections. Fitter drivers were given instructions in the maintenance of diesel engines at a transportation training unit. When the installation of the equipment was started in the railway workshops, electricians and fitter drivers were posted at the railway workshops to familiarise themselves with the maintenance of the unit.

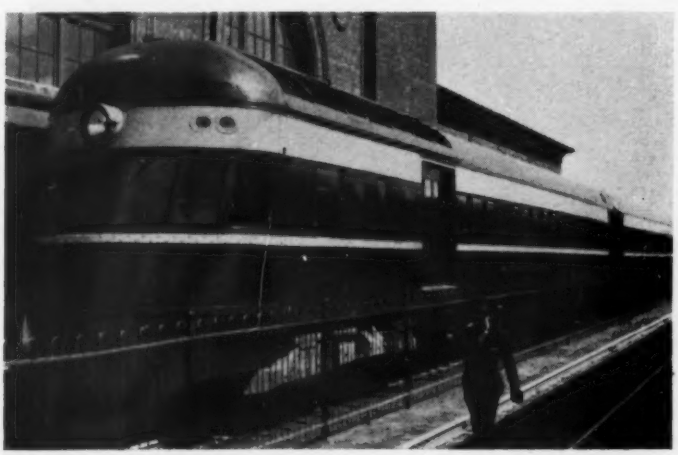
A large number of these units are in operation. It is hoped that all the standard ambulance trains at present in operation in India will be provided with two air-conditioned ward cars on each train by the summer of 1945. After the war, these air-conditioning units will be released from the ambulance trains and the existence of such a large number will form a nucleus to provide for air-conditioning of the first class coaches for most of the broad-gauge and metre-gauge long-distance mail and express trains.



Control panels in a ward car

An American Steam Railcar

AMONG various experimental applications of steam power tried in the United States during recent years is the Besler steam railcar. The two-car unit illustrated was introduced for service on the Bridgeport, Hartford, and Nangatuck Valley line of the New York, New Haven & Hartford Railroad in August, 1936, and continued in service for eight years. The unit consisted of two cars, with an overall length of 163 ft., seating 152 passengers, and in its streamlined form closely resembled a diesel-electric unit; the coach bodies were finished in royal blue, with a vermillion band above the windows, and a broad silver-grey band below. The power plant occupied a compartment 7 ft. long at one end of the train, and consisted of a boiler with auxiliaries, a fan-equipped condenser, and a power bogie. The boiler generated steam at approximately 1,200 lb. per sq. in. Oil-firing was employed with automatic action, the burners being arranged to start up when the steam pressure fell below a predetermined figure. The power bogie was equipped with four cylinders, two h.p. and two l.p., exhausting through condensers in the roof. The power plant weighed less than 4 tons. The train was air-conditioned, for which purpose an auxiliary unit provided the necessary ice in hot weather and steam heat was used in winter. Lavatory accommodation was provided and there was a very attractive scheme of decoration. Driving compartments were at both ends of the train. Presumably increased wartime traffic, and the inability of this unit to haul trailers, accounts for its withdrawal; the coaches have been reconditioned for other service.



Besler steam railcar and trailer

RAILWAY NEWS SECTION

PERSONAL

Mr. J. L. Willoughby, O.B.E., M.Inst.T., Traffic Manager, Sudan Railways, who is home on leave, has passed the Bar Final Examination. He is a Member of Gray's Inn.

Mr. C. G. W. Cordon has been appointed a Director, and the Portuguese Government has appointed Senhor Antonio Potier *ex officio* Government Director, of the West of India Portuguese Guaranteed Railway Co. Ltd. Mr. Cordon retired recently from the position of General Manager of the Madras & Southern Mahratta Railway.

The following announcement appears in the Third Supplement to *The London Gazette*, dated June 1, under the heading of Territorial Army—Royal Engineers: Engineer & Railway Staff Corps:—

Stanley Ernest Parkhouse, O.B.E. (348153), to be Major, May 13, 1945.

Major Parkhouse is Assistant Chief Operating Manager, L.M.S.R.

L.P.T.B. Staff Changes

Mr. G. Eland, Audit Officer of the London Passenger Transport Board, has retired, and Mr. H. E. Osborn, Statistical Officer, has been appointed to succeed him.

Mr. H. C. Davy, Treasurer to the Board, has retired, and Mr. F. H. Spratling, Acting Statistical Officer, has been appointed Treasurer.

Mr. H. Warren, Director of Research & Engineering of the company, has been appointed Managing Director of the British Thomson-Houston Co. Ltd.

Mr. I. R. Cox (Joint Managing Director of Metropolitan-Vickers Electrical Export Co. Ltd.) has been appointed Managing Director of Metropolitan-Vickers Electrical Co. Ltd.

Dissolution Honours

Among honours approved by the King on the occasion of the Dissolution of Parliament are the following:—

Barons

Colonel the Rt. Hon. Sir George Loyd Courthope, Bt., M.C., T.D., J.P., D.L., Parliamentary Forestry Commissioner; M.P. for Rye since 1906. Director, Southern Railway Company.

The Rt. Hon. Sir Douglas Hewitt Hacking, Bt., O.B.E., D.L., M.P. for Chorley Division of Lancashire since 1918; for political and public services. Director, Thomas Tilling Limited, and Bristol Tramways & Carriage Co. Ltd.

Mr. Alexander George Walkden, J.P., M.P. for South Bristol, 1929-31, and since 1935; for political and public services. General Secretary, Railway Clerks' Association, 1906-36.

Baronet

Mr. Alexander Galloway Erskine-Hill, K.C., M.P. for North Edinburgh since 1935; for political and public services. Director, London & North Eastern Railway Company.

Mr. J. N. Nanda, General Manager of the Nizam's State Railway, who, as recorded in our March 30 issue, has been elected President of the Indian Railway Conference Association for 1945-46, was born in 1891. He graduated from the Government College at Lahore in 1909, and proceeded to England; after a three years' course with the City & Guilds College, London, he obtained the Diploma of Civil & Mechanical Engineering. He spent a further year in England with a firm of consulting engineers to gain practical experience. In 1917 Mr. Nanda entered the service of the Burma Government as an Engineer. Two years later he took up an appointment as an Assistant Engineer with the N.S.R. (then H.E.H. the Nizam's Guaranteed State Railways Co. Ltd.). A visit to Europe, America and the Far East in 1935 gave him much additional experience of transport problems. Soon after his return he was appointed Deputy General Manager of the N.S.R., and later he became Chief Engineer. He has been General Manager since 1941. The election of Mr. Nanda represents the first occasion on which an Indian officer has been elected President of the Indian Railway Conference Association.

Mr. J. N. Nanda

Elected President, Indian Railway Conference Association, for 1945-46

Mr. L. C. Southcott, B.Sc., A.M.I.Mech.E., has been appointed Chief Engineer of the Superheater Co. Ltd.

Mr. R. E. Robins, General Manager of the Kenya & Uganda Railways & Harbours, is on a short visit to this country.

Southern Railway Appointments

Docks & Marine Department

Mr. J. P. Campbell to be Superintendent Marine Engineer, with headquarters at Southampton Docks.

Mr. A. G. Liston, Acting Superintendent Marine Engineer, Southampton Docks, to be Marine Engineer, Southampton Docks.

Mr. F. W. Luff, Assistant Mechanical Engineer, Newhaven, to be Marine Engineer, Newhaven.

Mr. R. Stewart, Assistant Marine Engineer, Dover, to be Marine Engineer, Dover.

Labour & Establishment Department

Mr. G. V. Metcalfe to be Welfare Supervisor (Males), Waterloo.

At the suggestion of Mr. James V. Forrestal, U.S. Secretary of the Navy, a Senate committee, accompanied by U.S. Government officials, has left for Europe to study the communications facilities of the Continent. Senator Burton K. Wheeler (Montana) is Chairman, and is accompanied by Senators Ernest McFarland (Arizona), Frank P. Briggs (Missouri), Albert W. Hawkes (New Jersey) and Homer E. Capehart (Indiana). Other members of the party are Mr. Paul A. Porter, Chairman of the Federal Communications Commission; Rear-Admiral Joseph Redman, Director of Naval Communications; and Major-General Frank P. Stoner, of the U.S. Army Signal Corps.

South African Railways & Harbours

Senator the Hon. W. R. F. Teichmann has been appointed a Commissioner on the Railways & Harbours Board.

Mr. J. W. B. Carter, System Manager, Port Elizabeth, has been appointed System Manager, Cape Town.

Mr. H. R. Moffat, Harbour Engineer, Durban, has been appointed to the newly-created post of Assistant Chief Technical Officer (Reconstruction), Johannesburg.

Mr. J. G. Pauling, System Engineer, Durban, has been appointed Inspecting Engineer, Office of the Chief Civil Engineer, Johannesburg.

Sir Walter Monckton (Solicitor-General) was invested by the King on June 6 with the Insignia of a Knight Commander of the Most Distinguished Order of St. Michael & St. George.

Mr. T. R. Heaton, District Goods Manager, Wolverhampton, L.M.S.R., who, as recorded in our May 4 issue, has been appointed District Goods Manager, Leeds, joined the former L.N.W.R. as a probationer in 1911, and obtained experience in the Goods and Traffic Departments in the London and Birmingham areas and elsewhere. He served with the Armed Forces from 1916 to 1919; in 1920 he became Assistant to Superintendent, Garston. In 1925 he was appointed Assistant to District Goods Manager, Leeds, and six years later was made Assistant District Goods Manager there. He became Assistant District Goods Manager, Birmingham, in 1938. Mr. Heaton was appointed Dock Superinten-

dent, Holyhead, in 1942, and District Goods Manager, Wolverhampton, in November, 1943.

Mr. S. G. Hearn, Operating Assistant to Superintendent of the Line, Paddington, Great Western Railway, who, as recorded in our June 8 issue, has been appointed Principal Assistant to Superintendent of the Line, Paddington, entered the company's service at Plymouth in 1911. Apart from four years with the Royal Engineers (Signals) during the war of 1914-18 in France, Belgium and Germany, he was employed at various stations in the Plymouth Division until 1921. In that year, Mr. Hearn was selected for the company's special training scheme, and was the first Traffic Department clerk to be so chosen. He received facilities for obtaining additional experience in the Goods, Traffic, and Docks Departments. After his training period, Mr. Hearn served for three years on the personal staff of the General Manager. In 1928 he took up special duties in the Office of the Superintendent of the Line, where he remained until his appointment as Junior Assistant to the Divisional Superintendent at Newport in 1930. He was transferred to the Worcester Division as Chief Clerk to the Divisional Superintendent in 1933, and in 1936 was made Assistant Divisional Superintendent at Newport. In December, 1938, he became Divisional Superintendent, Gloucester, and in April, 1940, Assistant to the Superintendent of the Line, Paddington. Mr. Hearn was appointed Operating Assistant to Superintendent of the Line, Paddington, in February, 1941.

Mr. S. G. Hearn

Appointed Principal Assistant to the Superintendent of the Line, G.W.R.

Mr. J. Worssam, General Manager of the Eastern Counties Omnibus Co. Ltd., is retiring after 40 years of service in the road transport industry. Consequent on his retirement the following changes are announced :—

Mr. C. H. S. Pickett, General Manager of the Eastern National Omnibus Co. Ltd., has been appointed General Manager of the Eastern Counties Omnibus Co. Ltd.

Mr. J. S. Gavin, General Manager of the Caledonian Omnibus Co. Ltd., will be joining the Eastern National Omnibus Co. Ltd. as General Manager.

Mr. H. H. Merchant, Traffic Manager of the Crosville Motor Services Limited, becomes General Manager of the Caledonian Omnibus Co. Ltd.

We regret to record the death on June 7, at the age of 65, of Mr. William Henry Grieve, Chairman & Managing Director of Lightalloys Limited.

Mr. C. W. Powell, Assistant to Superintendent of the Line, Paddington, Great Western Railway, who, as recorded in our June 8 issue, has been appointed Operating Assistant to Superintendent of the Line, Paddington, entered the company's service in 1915 in the Office of the Superintendent of the Line. In January, 1918, he joined H.M. Forces; he served in the Inns of Court O.T.C. and in the R.A.F. until March, 1919, when he returned to the Passenger Train Section of the Office of the Superintendent of the Line. In July of the same year he was transferred to the Divisional Superintendent's Office, Swansea, to gain station and divisional experience, and he remained there until 1923, when he returned to the Rates & Fares Section of the Office of the Superintendent of the Line. From 1925 to 1934, Mr. Powell was attached to the Passenger Train Working Department, and in the latter year became a passenger train runner. From October, 1935, until August, 1936, Mr. Powell acted temporarily as an Assistant to the Divisional Superintendent at Paddington; and in August, 1936, he was appointed Chief Clerk to the Divisional Superintendent at Worcester. In June, 1938, he was transferred to the Bristol Division as Chief Clerk to the Divisional Superintendent; and in April, 1940, he became Assistant Divisional Superintendent at Paddington. Mr. Powell was appointed Assistant to Superintendent of the Line, Paddington, in April, 1942.

Mr. C. W. Powell

Appointed Operating Assistant to the Superintendent of the Line, G.W.R.

Mr. Raymond Birch (of the British Electric Traction Co. Ltd.) has been elected Chairman of A. Timpson & Sons Ltd., in succession to the late Colonel H. I. Robinson, and Mr. Alfred Baynton (General Manager of the East Kent Road Car Co. Ltd.) has been appointed a Director.

Mr. A. Foster, who, as recorded in our June 8 issue, has retired from the position of Assistant (Trade Advertising), Chief Commercial Manager's Office, Watford, H.Q., L.M.S.R., entered L.N.W.R. service in 1895, in the General Manager's Department. In 1901, after a probationary period in the Goods Department at Camden, he was transferred to the District Superintendent's Office at Euston as Claims Clerk. In 1903, Mr. Foster went to the office of the Superintendent of the Line, first as General Correspondence Clerk and later as Claims Clerk. In 1919, he was appointed Chief Claims Clerk (Traffic Department) for the whole of the L.N.W.R., and was responsible for the organisation of a centralised office at Euston. In 1925 he was appointed Chief Claims Clerk (Passenger Department) for the L.M.S.R., and in that connection organised a centralised office at Derby to deal with all claims in the area south of Carlisle, with supervision of the Scottish Area; that office dealt also with claims for personal injury, matters connected with lost property, and the supervision of the unclaimed property depots. During that period Mr. Foster was a member of the Joint Claims Committee of the Associated Railway Companies at the Railway Clearing House, and was twice Chairman of that committee. He was also a lay representative for the railway companies on the Terms & Conditions Committee during the negotiations between the railway companies and the traders in connection with the standardisation of terms and conditions of carriage by railway arising out of the Railways Act, 1921, and gave evidence before the Railway Rates Tribunal on the companies' behalf. Mr. Foster was appointed Assistant to Advertising & Publicity Officer, Euston, in 1930, and from that date was engaged on the re-organisation of the trade advertising business of the L.M.S.R. until appointed, in 1932, Trade Advertising Assistant to Passenger Manager, Euston, which position was shortly afterwards redesignated as Assistant (Trade Advertising), Chief Commercial Manager's Office.

Mr. A. Foster

Assistant (Trade Advertising), Chief Commercial Manager's Office, L.M.S.R., 1932-45

Mr. Raworth—An Appreciation

The announcement in *The Railway Gazette* of June 1 concerning Mr. Alfred Raworth's retirement from the position of Chief Electrical Engineer to the Southern Railway recalls to mind his outstanding achievements in modernising and extending the electrified system of that railway.

When Mr. Raworth was appointed Electrical Engineer for New Works he was soon faced with the difficulty of extending the suburban electrification to some of the heavily-loaded main lines. For this purpose the system hitherto used, employing attended substations containing rotary converter units, usually with one spare set, was unsuitable mainly on account of the large cost of attendants' wages.

The problem was to supply current 660 volts d.c. to trains requiring a maximum accelerating current of 4,500 amperes anywhere on the line without excessive drop of pressure in the rails. Mr. Raworth's solution was to introduce a system employing single-unit remotely-controlled rectifier substations equipped with the most modern apparatus then available. These substations, which, in fact, contained in their single units the correct proportion of spare converting capacity, were disposed sufficiently closely to maintain a reasonable voltage regulation on the line and at the same time to allow of alternate substations being shut down without affecting traffic operation. This system was first used on the extension of the electrification to Brighton and has subsequently been adopted not only for all the main lines of the Southern Railway electrified since 1930, but also by engineers on other railways. The substations were quite small and inexpensive, unattended and remotely controlled from a central control room capable of dealing with forty or more substations, resulting in considerable saving of personnel and giving perfect control of the whole system.

It should be emphasised that, at the time, most of the equipment selected by Mr. Raworth, such as remotely-controlled rectifiers, were more or less untried both in design and application, so that the credit for the successful results achieved and the exceptionally good service enjoyed are mainly due to his outstanding ability in selecting the best and most economical system and equipment.

Much has been written in the press of the vulnerability of electrified lines to enemy attacks, but on the Southern Railway, throughout the " blitz " current was always available on the third rail by the time that the tracks were in a physical condition to carry traffic, showing the soundness and reliability of the system and lay-out adopted.

Last but not least, many improvements were carried out by Mr. Raworth to the electrical equipment of the rolling stock, especially in respect of the multiple-unit motor coaches. The new d.c. locomotive, a brief description of which has appeared in the technical press, appears to have a promising future, and here again the originality of design in the electrical equipment is an example of Mr. Raworth's experience and technical ability.

In conclusion, it may be said that the electrification of the Southern Railway has been an outstanding success both technically and commerically, and that the designs adopted and consistently followed have been the best possible, bearing in mind the characteristics of the system with its exceptionally heavy traffic and comparatively short main lines. The travelling public owes a debt of thanks to the Southern Railway for its progressive policy and to Mr. Raworth for putting it into practice so successfully.

" O."

Staff and Labour Matters

Labour Controls

As foreshadowed in the Government White Paper (Cmd. 6568) on the Re-allocation of Labour during any interim period between the defeat of Germany and the defeat of Japan, the Ministry of Labour & National Service has issued recently the Control of Engagement Order, 1945. It is an integral part of the Government's plan for the orderly re-allocation of the men and women who can be released from their particular jobs in war service or in the munitions industries, and for effecting this as far as possible on a voluntary basis and narrowing the field of compulsion to the strictest limits. Although Defence Regulation 58A is being retained in the background, the intention is to dispense with the use of the power of direction to a great extent and to use instead the much more limited powers of the Control of Engagement Order.

The object of the Order is to ensure that the men and women now to be released from their present war jobs, and particularly younger men and women, should go to work in which their services are required in the national interest, by providing that engagements of specified classes of persons may be made only through approved agencies.

The Order controls engagement by prohibiting:—

(*a*) employers from seeking to engage any person for employment (for example, advertise a situation vacant either in the Press or by exhibition of a notice or by circular letters) except by notifying particulars of vacancies to a local office of the Ministry of Labour & National Service or to an agency approved under the Order;

(*b*) employers from engaging any person for employment unless that person has been submitted by a local office or an agency approved under the Order;

(*c*) workers from taking up employment otherwise than by submission through a local office or an agency approved under the Order.

Re-engagement by the same employer is regarded as engagement but re-engagement is permitted without reference to the local office:—

(*a*) If the period between termination and re-engagement is not more than 14 days—except in the case of employees of building and civil enginering undertakings;

(*b*) immediately following any period of sickness which caused the termination of employment—but in the case of employees of building and civil engineering undertakings the re-engagement must be on the same site unless permission to transfer is obtained;

(*c*) on resumption of work on the termination of any stoppage of work due to a trade dispute which caused the suspension of employment.

The persons whose engagement is controlled, namely, the restricted age-groups, are men ages 18-50 inclusive and women aged 18-40 inclusive. Provision is made in the Order to enable the Minister to reduce the upper age-limits from time to time and thus narrow the field covered by the Order.

A.S.L.E. & F. Annual Conference

The annual conference of the A.S.L.E. & F. was held at Rhyl this year from May 28 to June 8, and Mr. D. F. Sharman (President of the Society) presided over the proceedings.

The Society's programme for improving rates of pay and conditions of service which it has submitted to the Railway Executive Committee, and nationalisation of the railways, were among the many subjects dealt with by the conference.

On the question of wages and conditions of service the conference passed a resolution which stated that strike action would be taken in the event of their demands being refused.

The conference supported the policy of nationalisation of transport and called on members of the union to raise the matter vigorously with every Parliamentary candidate. Mr. Allen, the General Secretary of the Society, said they looked on nationalisation not only as a means of improving the service, but also to improve the standards of the workers. The Society had pointed out to the Minister of War Transport that nationalisation was not purely a political question, but in the interests of the country.

The War Work of Davey Paxman & Co. Ltd.

The great contribution made to the war effort by British diesel engine builders is well illustrated by information recently released relative to the output of Davey, Paxman & Co. Ltd., of Colchester, from 1939 to 1945.

In addition to diesel engine construction the company has been associated with steam engineering since 1867, and a continuous connection has been maintained in the intervening years, mainly with boilers. During the war the company has supplied numbers of auxiliary steam boilers for locomotive shed service. Included in other items of equipment for railway use were a number of sets of clutch components for the G.W.R. and L.M.S.R.

The output of diesel engines constructed by the company during the war aggregated over two million horse-power, comprising more than half of the propulsion units required for British submarines built during the war, also all power plant for British diesel-engined tank landing craft and for all British diesel motor gunboats. Included also are the power units built by the company for the " Gay Viking " class of blockade runners. The output covers auxiliary engines for more than 1,000 naval vessels and a large number of merchant ships, including the famous tanker " San Demetrio." The company constructed power units for all the heavy anti-aircraft guns used in the tremendous barrages put up against the flying-bomb attacks in 1944.

In addition to diesel engines and large numbers of steam boilers for land and sea use, the company built chemical and refrigerating machinery and munitions of war of all kinds, including sprockets for tanks: in fact, the company became the biggest makers of tank sprockets in Great Britain.

B.A.P. Wins Against Argentine Government.—A Reuters message from Buenos Aires states the Supreme Court has ordered the Argentine Government to pay the Buenos Ayres Pacific Railway Co. Ltd. 338,526.24 pesos (approximately £19,800) as part refundment of rebates in freights the railway has been obliged to effect on the transportation of materials and cargo belonging to the nation. The Government had claimed from the railway a 50 per cent. rebate in tariffs for war materials, while the Supreme Court resolved to reduce the rebate to 25 per cent.

TRANSPORT SERVICES AND THE WAR—298

L.N.E.R. Government Specials

The total number of Government military specials run by the L.N.E.R. from the outbreak of war up to VE-Day was 84,337.

L.M.S.R. Government Specials

During the 5½ years of the European war, the L.M.S.R. ran no fewer than 176,480 special O.H.M.S. trains. Of these, 85,658 were passenger trains conveying 26 million Forces personnel, and 90,822 were stores, ammunition, petrol, and mail trains consisting of a total of 3 million wagons. In addition, 1,652 ambulance trains, 1,565 prisoner of war trains, and 1,858 evacuee specials were run, making a grand total of 181,555.

S.R. Government Specials

From the outbreak of war until VE-Day, the Southern Railway conveyed 13,581,387 men in 48,188 Government specials. Another 6,264,474 members of the Forces were conveyed by ordinary trains on pre-arranged duty moves, in addition to the many millions who have travelled on Home Service leave by ordinary passenger trains. In addition to the above, 35,358 special freight trains have been run for the Government.

G.W.R. Government Specials

As we recorded briefly in our June 1 issue, from the outbreak of war in 1939 to VE-Day, the G.W.R. ran 103,898 Government specials, carrying 10,454,778 men and more than 15,000,000 tons of stores and equipment. Throughout the war not a single complaint was received from any one of the three Services, and this "clean bill" has been secured despite the fact that the G.W.R. has 16,305 men serving in the Forces, civil defence services, in the mines or in other essential industries.

The Cross-Channel Service

The regular daily train and boat service between Paris and London is still confined to passengers with an official permit to travel, which is very hard to obtain. The Newhaven-Dieppe route is the only one of the pre-war cross-Channel services being operated, and it is served by two pre-war Channel steamers. The time taken by the journey from London to Paris varies every day according to the state of the tide in the Channel. The shortest trip is about 12 hr. and the longest just over 22 hr. The rail journey from Dieppe to Paris also varies slightly in the time it takes, but averages about 4 or 5 hr.

New Buses

A limited number of the following makes of public service vehicle will be available to operators during the last few months of 1945 :—

Double deck	Single deck
Albion	A.E.C.
A.E.C.	Albion
Leyland	Maudslay

These will be in addition to those already available, namely, Bedford s.d., Bristol d.d., Crossley d.d., Daimler d.d., and Guy d.d.

Operators should now make application on their own initiative to the Regional Transport Commissioners for licences to acquire public service vehicles, and not, as in the past, wait for periodic notifications from Commissioners of vehicles available.

Road Transport Concessions

Special permits for household removals by road in excess of 120 miles are no longer required.

The special restriction on funeral hearses to journeys within 60 miles has also been withdrawn.

Furniture vans and hearses of course remain subject to the normal fuel rationing control.

Turin Tram Traffic Resumed

Tram traffic in Turin, which had been discontinued during the evacuation of the German Forces, was resumed early in May as a result of the efforts undertaken by the local Inter-Allied Military Administration to restore the life of the town to normal.

Berlin Underground and Tram Services Resumed

According to a recent report from Russian-occupied Germany, services have already been resumed in Berlin on a limited number of underground and tram lines, now that some power stations have been restored to working condition.

German Railway Links Restored

Railway communications across the Elbe, between the British and the Russian zones, was restored on June 1, according to the Russian-controlled Vienna radio. It was stated on June 6 that 14 trains had left in both directions; they are being used exclusively, at present, for the repatriation of prisoners of war.

Russian Gauge Advancing Westward

According to news recently published in the Moscow *Pravda*, the Polish railway system to the east of the River Vistula has been converted from the 4 ft. 8½ in. gauge to the Russian 5-ft. gauge. Through trains are now operated between Moscow and Warsaw, a distance of 740 miles, *via* Minsk, Niegoreloje, Stolpce, and Bialystok.

Reichsbahn Vessels on Constance

The nine Reichsbahn vessels on Lake Constance which took refuge in Switzerland, as recorded in our June 1 issue (page 549), left for Germany again on the afternoon of May 17. They were taken back by German crews who had been allowed to enter Switzerland for the purpose under the supervision of the French.

Railway Traffic in French Area of Germany

May 24 saw the resumption of train services on the line between Constance and Tuttlingen in French-occupied Southern Germany. Tuttlingen, which is 44 miles to the north-west of Constance, is an important railway junction where the main lines from the north (Karlsruhe and Stuttgart), from the west (Freiburg in Breisgau), and from the north-east (Ulm) converge.

French Railway Connection with Basle Resumed

After a break of five years and nine months, direct railway traffic between France and Basle was resumed on May 7, when a train consisting of a French locomotive and French wagons arrived at Basle Central Station at 11.7 a.m. from Mulhouse; it had connected there with a fast train from Paris. The train left Basle for Mulhouse on the same day at 2.2 p.m.

The first goods train from France to arrive at Basle over the direct route *via* Mulhouse entered Basle goods station on May 19. It consisted of 36 wagons, some French and some of other railway administrations.

Franco-Swiss Railway Traffic

Railway traffic between France and Switzerland, *via* Vallorbe, the frontier station on the main line between Dijon and Lausanne, was resumed on May 7, after a break of five years and nine months, when at 9.25 a.m., the first fast train between Paris and Lausanne entered Vallorbe Station. Before the war, the Simplon-Orient Express used the Dijon-Vallorbe-Lausanne section, which formed a short cut in the direct route between Paris and Milan *via* the Rhône Valley.

The reconstruction of the Pyrimont Viaduct was completed early in May, and test runs were made on May 5. Direct railway traffic between Lyons Perrache Station and Geneva Cornavin Station was therefore resumed.

Birsig-Thalbahn Working into France

In the changed conditions of the French frontier region adjoining north-western Switzerland, the electric metre-gauge Birsig-Thalbahn between Basle and Rodersdorf resumed working its section situated on French territory on May 7, when the summer timetable became effective. The line is only 10 miles long, but its last 2½ miles, between Flüh and Rodersdorf, was not worked during the war as it crosses French territory which was in German occupation. The temporary terminus was at Flüh. Leimen is its only station in France; Rodersdorf, the terminus, is again on Swiss soil.

The American M.R.S. in Europe

More than 18,500,000 net tons of supplies were hauled by the U.S.A. Transportation Corps Military Railway Service during the 11 months from D-Day to VE-Day in the largest and most complicated supply operation the world has ever known. A daily average of 3,000 tons during pioneering in Normandy rose to 125,000 tons a day during the period of the Rhine crossing.

The first American "locomotive" to run on continental rails went ashore near Isigny, France, on D + 11. It was an ordinary jeep fitted with demountable flanged wheels and was used by a 2nd M.R.S. reconnaissance party between Carentan and Cherbourg.

American engineers rebuilt bridges, repaired mined and bombed tracks, blasted blocked tunnels and made them into cuttings. More than 400 bridges and 12,000 miles of track were rebuilt before the end of the war.

American Sleeper Shortage

As a result of war conditions, the sleeper position in the United States is steadily worsening. Production continues to fall, and inventories at the works of the principal companies show that the stocks of sleepers on hand in January, 1945, were only 71 per cent. of the stock at the beginning of 1944; by February the stock was only just over one-half of that available four years earlier. One reason is shortage of labour; another is that the present selling price of timber in the U.S.A. makes it unprofitable to divert the timber to the production of sleepers. Adjustment of price in favour of the sleeper is therefore essential. Another difficulty is that many mills, particularly those which have gone out of service because of war conditions, need replacement of parts, and mill supplies and equipment generally. Yet another factor is the availability of lorries, parts to service them, and tyres in particular, for there is a good deal of road haulage, in the remoter parts of the country, from forests to mills, and from mills to treating plants or to railways. Then, as previously mentioned, there is the matter of labour, the loss of which is due not entirely to war shortage, but to the competition of other industries offering higher wages. To overcome the labour shortage, the Office of Defense Transportation is seeking the co-operation of other Government agencies. Nothing is said as to the possibility of using steel or concrete sleepers, and apparently both these alternatives are ruled out on United States railways, for the time being at least.

L.M.S.R. Research Staff and British Universities

Many of the recent discussions and reports on industrial research and the place of science in industry have emphasised the need for closer relations between the universities and industry and for better facilities for the interchange of personnel between them. University and technical college laboratories will be to an increasing extent the training ground for the higher technical and research staffs of industry, and that training, although it must keep its basic character, would gain by having a more realistic background. Here industry can help in two ways:—

(1) by sending members of its staff for short periods to help in university teaching;

(2) by giving university teachers opportunities of seeing the day-to-day working of industry and the type of problem which the future university entrant will have to face.

A statement issued by the L.M.S.R. points out that in addition to teaching and training, university laboratories have equally important work to do in scientific research. For it is in the university laboratories that the bulk of the fundamental research will be done, from which new ideas, new developments and new inventions will arise. Hence there should be a constant interchange between university and industrial research laboratories to ensure that the latter have the advantage of the latest ideas and technique and that university staff may have the stimulus of seeing how fundamental research is being applied by industry.

The foundation by Imperial Chemical Industries Limited and the Bank of England of research fellowships at the universities gives new and generous support to fundamental research, but in addition a two-way traffic is needed to keep the universities and industry in closest touch. With this end in view the board of the L.M.S.R., after consultation with the universities, has decided to try the following plan. Some members of its research staff will be seconded each year to do fundamental research in their particular field in university laboratories. It is hoped that the universities will invite them to spend part of their time in teaching, so that they may make a useful contribution in this way.

At the same time the universities will be invited to send members of their staff for six months or a year, or even shorter periods, to work in the research laboratory at Derby on applied problems in which they are interested on the fundamental side. They would also have access to all the departments of the railway, which include civil, mechanical, electrical, signal and road motor engineering, and would have the opportunity of seeing how the results of research are applied in large-scale developments in railway working. The L.M.S.R. research laboratory has a staff of 70 university graduates and has sections dealing with engineering, metallurgy, chemistry, physics, paint and textiles. Its research programme is settled in consultation with a Scientific Advisory Committee consisting of a number of distinguished scientists in addition to the company's chief technical officers.

At present the possibilities of such an experiment are limited by the shortage of man-power. The Chairman and Board of the L.M.S.R. hope, however, that their scheme will in time contribute towards a closer understanding between the universities and industry, particularly on the engineering and scientific sides.

Cableways in Chungking

A cableway service in Chungking, China, is reported to have been inaugurated in February. This new step in passenger traffic services and facilities has no counterpart elsewhere in China. Construction was begun in July, 1944. The cableway extends from the Wanglungmen ferry landing (Gazing Dragon Gate) on the north bank of the Yangtze River to Lin Sen Road in Chungking. The total estimated cost is CN$46,790,000. A double line of metre-gauge rails is laid, similar to those used on light railways. Two cars are operated simultaneously, one moving upward while the other moves downward. Each car weighs 6 tons when empty and 7½ tons when fully loaded. City electric power is used. The cable cars are equipped with a safety device as provision against the power supply being stopped. The time required to make a trip between the terminals is 3½ min. It is estimated that two cars are able to carry 10,000 passengers in every 10-hour day. Cross-door turnstiles are used at each terminal. They open the door of the car automatically and keep count of the number of passengers. A special coin is used in lieu of tickets.

A freight-hauling cableway at the Chialing wharf at Chaotienman is being built at an estimated cost of CN$28,300,000 to carry goods up to the street after being unloaded from river steamers and junks. This cableway is expected to be in operation by July, and to carry about 15 tons an hour.

Development of Railway Bus System in the U.S.A.

Wartime restrictions on non-essential road transport in the U.S.A., primarily in the interests of rubber conservation (although also to save petrol transport to the eastern part of the Continent), have resulted in a diminution in motorbus activities there, as in most parts of the world. In our issue of July 30, 1943 (page 118), we showed that the American railways were interested in the operation of some 5,200 buses by direct ownership, through associated road companies, or in co-ordinated workings. Latest statistics are not available.

With the improved situation in the world's war condition that has resulted from the victory in Europe, it may be expected that the American motorbus industry will enjoy a gradual restoration, and therefore the present time is opportune to consider the growth of the railway-associated bus system as it was when the U.S.A. became involved in the war as a belligerent.

In little more than five years the National Trailways System developed into a transcontinental maze of bus routes, with member companies operating in every section of the United States. This great system was begun by a group of railway bus subsidiaries which wished to have a central organisation for advertising and other interests of mutual benefit. As was stated in *The Railway Gazette* of June 5, 1936, when the early days of the organisation were reviewed, practically all the coach companies are either subsidiaries of, or partly owned by, the railways and the object of National Trailways is to co-ordinate road travel on through roads between the Atlantic and Pacific coasts. Each of the companies involved retains its identity and management, but the vehicles engaged are painted alike and carry the National Trailways emblem.

In the negotiations leading up to the organisation of National Trailways, the Burlington Transportation Company, a wholly-owned subsidiary of the Chicago, Burlington & Quincy Railroad, played a prominent part. The coach company was formed on April 9, 1929, to operate three routes in Nebraska; it was started by the railway to replace unprofitable train services. By the end of that year the road miles covered had grown to 858, and it was stated that the substitution of buses for trains, mainly on fairly short runs, had saved the company $45,000 in that year.

At the end of 1937 the organisation had grown until it embraced 16 coach operators. A list of the companies embraced by National Trailways, published in 1941 in our American contemporary, the *Railway Age*, showed that the system covered 40 separate companies, as follow:—

Adirondack Trailways
Safeway Trailways
Northern Trailways
Trailways of New England
Yankee Trailways
Indianapolis & Southeastern Trailways
Red Star Trailways
C. & L.E. Transportation Company
Virginia Trailways
Queen City Trailways
Smoky Mountain Stages
Georgia Trailways
Bay Line Trailways
Carolina Trailways
Virginia—Carolina Trailways
Carolina Scenic Coach Lines
Crescent Stages
Tamiami Trailways
Capital Motor Lines
Dixie Coaches
Evergreen Trailways
Burlington Trailways
Jacksonville Trailways
Central Trailways
M.K. & O. Trailways
Southwestern Trailways
Panhandle Trailways
Rio Grande Trailways
Mo. Ark. Trailways
Denver—Salt Lake—Pacific Trailways
Denver—Colorado Springs—Pueblo Trailways
Santa Fe Trailways
A. W. Shepherd Bus Lines
Dixie Trailways
Sunshine Trailways
Interurban Trailways
Bordelon Trailways
Missouri Pacific Trailways
Bowen Trailways
Tri-State Transit Company

These included five steam railway and two electric railway subsidiaries, and the railway subsidiaries represented nearly half the total mileage. The owning lines were:—

Atchison, Topeka & Santa Fe
Atlanta & St. Andrews Bay
Chicago, Burlington & Quincy
Denver & Rio Grande Western
Missouri Pacific

One of the matters which received especial attention was the provision of properly-designed stations, and considerable progress had been made in this direction by the time the U.S.A. entered the war. The improved terminals provided by National Trailways showed the very high standard of public facility which could be afforded on a nation-wide basis as the result of the pooled experience of the constituent companies. Individual companies progressed along similar lines in the smaller cities, and the system established modern joint terminals in several of the larger cities. Member lines were also progressive in modernising and air-conditioning equipment, and in the use of diesel-powered buses.

PUBLIC UTILITY UNDERTAKINGS (PREVENTION OF PUBLICATIONS) (REVOCATION) ORDER.—The Minister of War Transport on May 29 made the Public Utility Undertakings (Prevention of Publications) (Revocation) Order, 1945. Copies may be obtained from the Ministry of War Transport, Berkeley Square House, London, W.1.

Questions in Parliament

Railways' Valuation for Rating

Sir Joseph Lamb (Staffordshire, Stone—C.) on June 7 asked the Minister of Health, whether his attention had been drawn to the loss suffered by rating authorities in consequence of the inconsistency in the Railways (Valuation for Rating) Act, 1930, which was disclosed in the case of Worthing Corporation *versus* Southern Railway; and whether it was the intention of the Government to introduce legislation to put the matter right before the period of operation of the fourth railway valuation roll.

Mr. H. U. Willink (Minister of Health): Yes, Sir. The Government has agreed generally with the position expressed by Sir Joseph Lamb. I am not in a position, obviously, to promise legislation in the present session, but I hope that it will be possible to amend the Act of 1930 before the date of operation of the fourth roll.

Losses and Thefts on Railways

Mr. J. J. Stourton (Salford South—C.) on June 6 asked the Parliamentary Secretary, Ministry of War Transport, if he could now state the total financial loss through theft sustained by each of the four main-line railways during the year 1944.

Capt. G. E. P. Thorneycroft (Parliamentary Secretary, Ministry of War Transport) in a written answer stated: For the year 1944, the amount of the claims paid by the four main-line railway companies in respect of loss and theft of goods was as follows:—

	£
G.W.R.	313,000
L.N.E.R.	705,250
L.M.S.R.	1,211,000
S.R.	152,000

Separate figures in respect of thefts are not available. The aggregate number of claims was over 666,000.

Cheap Fares

The Rev. R. W. Sorensen (West Leyton—Lab.) on June 6 asked the Parliamentary Secretary, Ministry of War Transport, when he anticipated that cheap mid-day fares would again be available.

Capt. Thorneycroft stated in a written answer: The cheap mid-day fares which were in operation before the war on certain road services of the London Passenger Transport Board still are available. I am unable to say when conditions will permit of the restoration of cheap-day return fares on the main-line and Board's railways.

Cheltenham-London Service

Mr. D. L. Lipson (Cheltenham—Ind.) on June 6 asked the Parliamentary Secretary, Ministry of War Transport, if he could now provide a fast train every day, each way, between Cheltenham and London, as at present the scheduled time of this journey of 100 miles was about four hours.

Capt. Thorneycroft: This matter is being reviewed and I will communicate with Mr. Lipson as soon as possible.

Mr. Lipson: Will the Parliamentary Secretary bear in mind that Cheltenham is about the worst served city in the country?

Prof. D. L. Savory (Belfast University—C.): Does the Parliamentary Secretary realise that most of these trains have to stop twice at every station between Swindon and Gloucester, and that the delay is really intolerable?

London-Aberdeen Restaurant Cars

Sir Douglas Thomson (Aberdeen South—C.) on June 6 asked the Parliamentary Secretary, Ministry of War Transport, whether because the journey between London and Aberdeen took between 13 and 14 hours, he could now cancel his instructions to the railway companies and so enable them to provide restaurant or buffet-car facilities on that route.

Capt. Thorneycroft: The provision of restaurant or buffet-car facilities reduces the number of seats that can be provided. Passenger services are likely to be heavily loaded for some time to come, and I regret that I am unable to say when it will be possible to provide these facilities on the journey between London and Aberdeen.

Sir D. Thomson: Could not the Minister leave it to the railway companies? If he would remove his restrictions, there would be only one obstacle, and the railway companies could run these facilities if they were able to do so.

Capt. Thorneycroft: I have had special inquiry made into this matter recently, and I understand that the introduction of restaurant cars would reduce the seating accommodation, both because they cannot take so many people, and also because of the weight involved. However, I am keeping this matter in view, and if anything can be done I will do it.

Sir Robert Smith (Aberdeen Central—C.): Does not the Minister think it is more important that there should be more sleeping cars rather than restaurant cars on the trains to Aberdeen?

Capt. Thorneycroft: I am, of course, aware of the limitations of transport in all directions. Restaurant cars cannot be provided as long as there is a shortage of seating accommodation.

Mr. Evelyn Walkden (Doncaster—Lab.): Would it not be a good idea to advise the railway companies that "John Citizen" should have a chance of getting a seat for the ticket he buys?

Travel for Home-coming Soldiers

Mr. D. L. Lipson (Cheltenham—Ind.) on June 5 asked the Secretary of State for War if the travel vouchers given to men who had come home from overseas could be made available for first-class carriages to prevent the indignation felt by the men themselves and the travelling public when men who had served overseas were turned out of their seats to make room for civilians.

Sir James Grigg (Secretary of State for War) in a written answer stated: By making the vouchers available for first class travel these men would in practice become entitled to first class travel and there is insufficient accommodation for the traffic involved. Mr. Lipson's suggestion therefore is impracticable, quite apart from other objections, such as the difficulty in practice of treating men stationed at home in a different way. Special trains and reserved accommodation are provided whenever possible for men returning to this country on leave.

Holiday Transport

Mr. Evelyn Walkden (Doncaster—Lab.) on June 6 asked the Parliamentary Secretary, Ministry of War Transport, whether he was satisfied that sufficient engines, carriages and trains would be available to provide holiday transport for the large numbers of workers who, for the first time, would be granted holidays with pay this summer and autumn; and that as the few extra non-scheduled trains now provided were, at present, overcrowded, what improvements did he intend to apply.

Capt. Thorneycroft: The Minister of War Transport has asked the railways to run this summer such additional trains as their resources permit and the traffic requires, subject only to the overriding condition that they do not interfere with essential traffic. The number of additional trains the railways can provide for holiday traffic undoubtedly will be limited by shortage of engines and carriages.

Mr. Walkden: As the trains already provided are cluttered up and packed to suffocation now, and there will be no more available, what chance have war workers, or those who have made the munitions to win the war, of getting a holiday this year and getting some comfort on the trains?

Capt. Thorneycroft: Everybody will have the same opportunity in this matter, but Mr. Walkden should not under-estimate the difficulties we are in, with the repairs and building programme.

Requisitioning of Railway Wagons

Sir Herbert Williams (South Croydon—C.) on June 6 asked the Parliamentary Secretary, Ministry of War Transport, why it was decided to requisition all privately-owned railway wagons, other than special wagons, which had been completed since June 13, 1944.

Capt. Thorneycroft in a written answer stated: On the outbreak of war in 1939, privately-owned wagons, except those of certain specially exempted types, were requisitioned so that they should be operated in a pool with railway-owned wagons. This has enabled substantial operating economies to be effected and has greatly helped the railways in dealing with the increased traffic. New requisitioning Orders have to be made from time to time to cover wagons built since the date of the original Order.

Travel Permits for Organised Parties

Mr. J. D. Murray (Spennymoor—Lab.) on June 6 asked the Parliamentary Secretary, Ministry of War Transport, what was the basis adopted for granting permits to organised parties, such as bands, choirs, cricket teams, football teams, or any other groups who desired to travel by a public conveyance; and what was the maximum distance for such vehicles.

Capt. Thorneycroft: Where it is desired to hire buses or coaches for private parties, application must be made to the Regional Transport Commissioner for the issue of fuel for the journey. The relevant considerations are generally the availability of vehicles and crews without interference with essential services, the length of the journey and the adequacy of other means of transport. In the case of cricket or football teams engaged in representative matches or in the leading professional football competitions, a maximum distance of 50 miles generally is prescribed and for other cricket or football teams a maximum of 25 miles. In other cases the distance allowed depends on the circumstances.

Mr. Murray: Is the Parliamentary Secretary aware that the Salvation Army band, Langley Moor, desired to travel to Dinnington and were refused, and because of that silly decision 10 men had to miss a shift in the pit, thereby losing that valuable contribution to coal production?

Capt. Thorneycroft: I understand that in the case of that particular Salvation Army band the journey involved a round trip of 220 miles. We try to give these facilities wherever we can, but in a case like that I think the Regional Transport Commissioner's decision was probably right.

Mr. A. Bevan (Ebbw Vale—Lab.): Is the Parliamentary Secretary aware that musical competitions and musical festivals are a part of the national life of Wales, and that the time now has come to relax some of these restrictions and enable the Welsh people fully to enjoy their national institutions?

Capt. Thorneycroft: I am grateful to Mr. Bevan for raising that matter. We have given permission in a number of cases for these choirs to travel, but each particular case has to be considered on its merits.

Mr. Murray: Is the Minister not aware that in this case the driver was there, the

petrol was there and the bus was there, and still they were not allowed to travel?

Capt. Thorneycroft: In all these cases the drivers have buses, but we feel that they should be used on essential services.

Railway Companies' Air Lines

Lieut.-Colonel Sir Thomas Moore (Ayr Burghs—C.) on June 6 asked the Parliamentary Secretary, Ministry of Civil Aviation, if he would specify the railway companies by name which operated airlines before the war in England and Wales.

Flight-Lieut. W. R. W. Perkins (Parliamentary Secretary, Ministry of Civil Aviation): The air line operations of the four main-line railway companies in the United Kingdom were conducted by a number of airline companies. These airline companies were: Great Western & Southern Airlines Limited; Guernsey Airways Limited; Isle of Man Air Services Limited; Jersey Airways Limited; Railway Air Services Limited; Scottish Airways Limited; West Coast Air Services Limited. These companies had a total route mileage of approximately 5,700 miles. Of these companies, Scottish Airways operated exclusively in Scotland. Railway Air Services operated between England and Scotland, and Scotland and Northern Ireland. Isle of Man Air Services included a service between the Isle of Man and Glasgow. The other services operated in England and Wales and between England and North Ireland, Eire, Channel Islands, Scilly Islands and Isle of Man.

Sir T. Moore said that the Minister had not replied to his question. He had asked what were the names of the railway companies operating air lines before the war. The Minister had given a very long, interesting and comprehensive study of the whole question before the war, but not an answer to his question.

Flight-Lieut. Perkins said that Sir Thomas could raise the matter on the estimates for the Ministry of Civil Aviation.

Sir T. Moore said he had every intention of doing so.

Continuance of War Time Ministries

Sir Geoffrey Mander (Wolverhampton East—Lib.) on June 6 asked the Prime Minister if he was able to make any statement with reference to the future of the Ministries of Aircraft Production, Information, Production, Food, Supply and War Transport; and if it was intended to continue them, in whole or in part, as separate Ministries.

Sir John Anderson (Chancellor of the Exchequer): Yes, Sir. It is contemplated that it will be necessary to retain the Ministry of Information on a reduced scale during the war against Japan, each department thereafter becoming responsible for publicity policy within its own sphere; that the Ministry of Food will be retained so long as the Central Government continues to control the purchase, sale, distribution and price of food; and that the Ministry of War Transport will continue after the war. Although clearly no Government can pledge successors in a matter of this kind, the departments concerned have been authorised to proceed on the above assumptions for planning purposes. The offices of the Minister of Production and of President of the Board of Trade are now held by the same Minister. No decision has yet been reached as to the future of the Ministries of Aircraft Production and Supply.

Design in Modern Transport

Mr. Christian Barman, F.R.I.B.A., N.D.I., read a paper, "Design in Modern Transport," at the Royal Society of Arts on June 6. Mr. Grey Wornum, F.R.I.B.A., presided, and referred to Mr. Barman's onetime association with the L.P.T.B. where, as Director of Publicity, he "edited the Board's 'appearance values.'"

The British railways, said Mr. Barman, were the oldest in any country. Many of the principal stations were outgrown, and in the construction of rolling stock there were heavy arrears. Here he saw opportunities for re-designing which could not recur for a long time.

Mr. Barman visualised the ideal station: a place equal to our best restaurants and shops—the entrance fresh-looking and inviting—passenger circulation easy and direct—the interior attractive enough for half-an-hour's wait to be interesting. "Railway stations of the future cannot afford to be unattractive, for there are alternative means of transport which the public will use," he said.

Lamenting the recent trend of British designers to imitate the streamlining of American locomotives, he spoke of the extraordinary qualities of traditional British engine designs, the steady evolution towards purity and simplicity of form, and instanced the "A1" class Pacific type engine of the L.N.E.R. as being equal to the latest and best American streamline unit, and easily superior to any British streamline engine. The Underground, said Mr. Barman, had exploded the streamline theory 40 years ago, and he closed the subject with a reminder that there was still some difference between a railway engine and a torpedo.

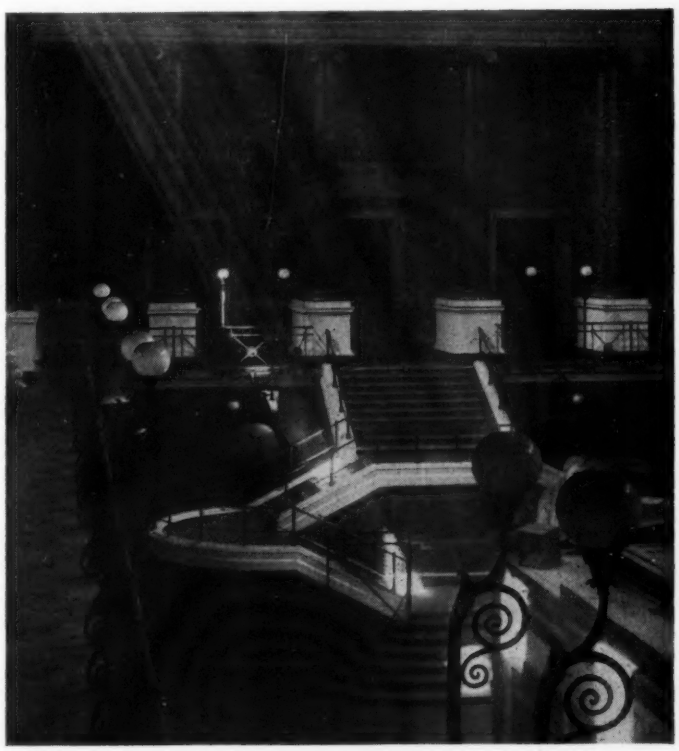
In coach design, said Mr. Barman, the most promising forms were the late Victorian compartment and the lounges and club rooms in modern Pullman cars. Both in railway and aircraft the "staggered" gangway with single seats on one side and three on the other should have a considerable future. Seats with adjustable backs were becoming popular for night travel.

In Mr. Barman's view, standing passengers could not, during the peak periods on urban and suburban lines, economically be avoided. He suggested that pillars to lean against were more popular than straps suspended from the roof, and also mentioned experiments made in the United States with small high seats on which the passenger rests in a half standing position.

In closing Mr. Barman said that good design in transport was the sign of a management that regarded the passenger with interest and respect. Next to efficient operation, the principal tasks of our transport undertakings in the coming years would be to express in design the same attitude towards the passenger that had made the personal service on our British ships and on our finest railway lines pre-eminent in the opinion of the world.

During the discussion that followed a member of the audience suggested that Mr. Barman had overlooked the importance of light alloys and electric power in the future of modern transport. His views on streamlining were also challenged.

Sunshine Returns to the Great Hall at Euston



After nearly six years the blackout has been removed from the Great Hall at Euston Station, L.M.S.R. The above illustration is from a photograph taken recently

Notes and News

L.N.E.R. Offices.—The secretary's office of the L.N.E.R. was re-transferred recently from York to Marylebone Station, London, N.W.1.

The Hunslet Engine Co. Ltd.—The telephone number of the Hunslet Engine Co. Ltd. has been changed from Leeds 20877 to Leeds 32261.

Butler Machine Tool Co. Ltd.—A dividend on the 5 per cent. cumulative preference shares of the Butler Machine Tool Co. Ltd. for the six months to June 30, 1945, will be paid, less tax, on June 30.

A. C. Wickman Limited.—The net profit of A. C. Wickman Limited for the year ended December 31, 1944, was £55,489 (£43,787). No ordinary dividend was declared for the year, against 8 per cent. for 1943.

Right-Hand Drive in Argentina.—The Executive Power of Argentina issued a Decree some time ago that road traffic is to run on the right-hand side of the road in Argentina as from June 10. We make reference to this in an editorial note, page 586.

Antofagasta (Chili) & Bolivia Railway Co. Ltd.—It is announced by the Antofagasta (Chili) & Bolivia Railway Co. Ltd. that after meeting the full year's interest on the debenture stocks and making provision for income tax, etc., and contributions to the renewals accounts and the staff benevolent fund, the balance on net revenue account for 1944 is approximately £384,000, which it is proposed to carry forward. This compares with £377,856 brought in.

Nameplates in Stainless Steel.—The naming of the L.M.S.R. locomotive No. 6249, *City of Sheffield*, took place at Sheffield Station last November. "This finest of locomotives should have nameplates made from the finest steel in the world" was the joint suggestion of Firth-Vickers Stainless Steels Limited and the Lord Mayor of Sheffield, who performed the naming ceremony. The company volunteered to make and present the nameplates and the offer was accepted by the L.M.S.R. as a symbol of the close ties between the railway and the industry of Sheffield.

Manufacture of Electrical Equipment in India.—The Brush Electrical Engineering Co. Ltd. has completed arrangements with the firm of Kirloskar Brothers for the manufacture of electrical equipment in India. There will be an exchange of technical information and Indian personnel will be trained at Loughborough.

A MESSAGE TO THE G.W.R. STAFF

Lord Portal, Chairman, and Sir James Milne, General Manager, G.W.R., have sent the following message to all G.W.R. staff :—

"Victory in Europe has at last crowned our united efforts. During the past five and a half years the Great Western Railway has played a very important part in maintaining the flow of essential war materials on behalf of the Government. This has been rendered possible only by the loyal co-operation of all members of the staff, and we are proud of the splendid work which has been accomplished in spite of the many difficulties incidental to war conditions. We are equally proud of the large number of employees serving in His Majesty's Forces and can assure them of a welcome on their return. We also recall with a deep sense of gratitude the names of those who have sacrificed their lives.

"In the difficult times which lie ahead we are sure that with your co-operation the fine traditions of Service which have so long been characteristic of the Great Western Railway will be fully maintained.

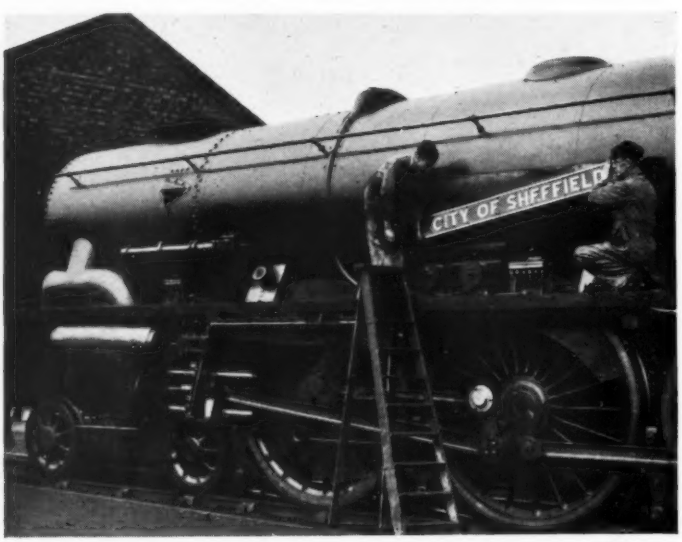
J. MILNE, General Manager. PORTAL, Chairman."

Gloucester Wagon Hiring Co. Ltd.—The Gloucester Wagon Hiring Co. Ltd. has been registered as a company to acquire such of the railway and other wagons belonging to the Gloucester Railway Carriage & Wagon Co. Ltd. as are let on hire without option of purchase. The capital is £10,000 in £1 shares.

Midland & Great Northern Rent Charge Stock.—Notice is given by the Secretary of the Midland & Great Northern Railways Joint Committee that in order to prepare the warrants for the dividend payable on July 2 a balance of the Midland & Great Northern Joint Line rent charge stock will be struck at the close of business on Monday, June 18.

Buenos Ayres Western Railway Limited.—The board of the Buenos Ayres Western Railway Limited announces that the principal of the 5 per cent. three-year secured notes, together with interest for the 4½ years to June 30, 1945, will be paid on July 2 next to holders on the register on June 18. The amount of the notes outstanding is £395,910; they were issued in 1941 in conversion at par of 4 per cent. three-year bearer notes maturing in 1941. They were originally repayable at par on

Stainless Steel Nameplates



Fitting a Sheffield steel nameplate to the L.M.S.R. locomotive, No 6249, "City of Sheffield" at Crewe Works

British and Irish Railway Stocks and Shares

Stocks	Highest 1944	Lowest 1944	Prices June 12, 1945	Rise/ Fall
G.W.R.				
Cons. Ord.	62¾	55	54½	—
5% Con. Pref. ...	122¼	114¾	118½	—
5% Red. Pref. (1950)	110¼	104	105	—
5% Rt. Charge ...	135½	128	134½	—
5% Cons. Guar. ...	134 7/16	125	130½	—
4% Deb.	118¾	112¾	116½	—
4½% Deb.	118 11/16	114	118½	—
4½% Deb.	124½	119½	123½	—
5% Deb.	137	129½	136½	—
2½% Deb.	77	73½	77½	—
L.M.S.R.				
Ord.	34¾	27⅞	27	— ⅞
4% Pref. (1923) ...	64½	55	55	— 1
4% Pref.	81	72½	74	— 1½
5% Red. Pref. (1955)	105½	102	104½xd	— 1
4% Guar.	107½	99½	103	—
4% Deb.	111½	104	108½xd	— 1
5% Red. Deb. (1952)	111	108	108½	—
L.N.E.R.				
5% Pref. Ord. ...	10½	7 7/16	6¾	—
Def. Ord.	5 7/16	3¾	3½	—
4% First Pref. ...	68½	55½	54½	—
4% Second Pref. ...	35¾	28½	28¼	—
5% Red. Pref. (1955)	102½	97½	102	—
4% First Guar. ...	105½	96¾	101	—
4% Second Guar. ...	95½	88½	95	— ½
3% Deb.	88½	80¾	86½xd	— 1
4% Deb.	110¾	103½	107½xd	— 1
5% Red. Deb. (1947)	105¾	101½	101½	—
4½% Sinking Fund Red. Deb.	107	104½	104½xd	— 1
SOUTHERN				
Pref. Ord.	80½	71⅞	72½	—
Def. Ord.	26⅜	23	22¾	— ¼
5% Pref.	122	113½	116½	— 1
5% Red. Pref. (1964)	117½	112½	115½	—
5% Guar. Pref. ...	134	125½	130½	— 2
5% Red. Guar. Pref. (1957)	115¾	112½	115½	—
4% Deb.	118	110	114xd	— 1
5% Deb.	135½	127	134½xd	— 1
4% Red. Deb. (1962-67)	111½	107½	109½xd	— 1
4% Red. Deb. (1970-80)	112	108¾	111½xd	— 1
FORTH BRIDGE				
4% Deb.	107	103	105	—
4% Guar.	106½	102	105	—
L.P.T.B.				
4½% "A"	125	119	122½	—
5% "A"	133½	128	132½	—
3% Guar. (1967-72)...	99½	98	99	—
5% "B"	124½	118 5/16	122½	—
"C"	72¾	64½	67½	—
MERSEY				
Ord.	35½	33	36½	—
3% Perp. Pref. ...	72	66	71	—
4% Perp. Deb. ...	105	103	106	—
3% Perp. Deb. ...	85½	79½	84	—
IRELAND*				
BELFAST & C.D.				
Ord.	9	6	6½	—
G. NORTHERN				
Ord.	33⅞	19	26	— ⅛
Pref.	49	37	43½	—
Guar....	70	57 3/16	69½	—
Deb.	90½	81½	89½	+ ½
IRISH TRANSPORT				
Common	—	—	73½	+ 2½
3% Deb.	—	—	100½	+ ½

* Latest available quotation

January 1, 1944, but under the moratorium scheme interest payments were postponed to June 30, 1945.

Dolphinton Branch Closed for Passenger Traffic.—The L.M.S.R. has announced that the passenger train service was withdrawn from the Dolphinton Branch on Saturday, June 2, and the following stations closed to passengers: Bankhead, Newbigging, Dunsyre, and Dolphinton. Parcels traffic is being carried by the freight train service.

Road Accidents in April, 1945.—The return issued by the Ministry of War Transport of the number of persons reported to have died, or to have been injured, as a result of road accidents in Great Britain during the month of April last shows 390 deaths (compared with 567 in April, 1944), 2,269 seriously injured (compared with 2,891 in April, 1944), and 6,605 slightly injured (compared with 7,039 in April, 1944).

Siemens Bros. & Co. Ltd.—Net profits of Siemens Bros. & Co. Ltd. for the year 1944, including £30,000 transferred from taxation reserves of previous years not now required, amounted to £340,041. For 1943 the net profit was £314,452, including £83,000 transferred from taxation reserves. The dividend on the ordinary stock for the year 1944 is 7½ per cent., less tax at 9s. A similar dividend was declared for 1943.

Accident on Belfast & County Down Railway.—After several sittings the inquest was concluded at Belfast on May 24 on the bodies of the 22 persons who lost their lives in the collision on the B.C.D.R. near Ballymacarrett Junction on January 10. The jury deliberated for an hour and returned a verdict that "these persons met their death as a result of a collision between two trains, the collision being caused by the failure of a faulty signal and fog which obscured the driver's vision. Also there should have been fogmen on duty. In addition there should have been an assistant in the signal box." It was stated at an earlier sitting that a number of civil actions were pending as a result of the accident, the most serious to occur anywhere in Ireland since 1889.

Argentine Railways.—The Argentine Ministry of Public Works and the Argentine State Railways have recently issued the following figures of net revenue for all the Argentine railways for the years 1943 and 1944, and also for the six months ending June 30, 1945.

—	Financial year		1st half 1944-45
	1942-43	1943-44	
	m$n.	m$n.	m$n.
Brit Coys.—			
B.A. Sthn. ...	29,689,096	21,696,664	12,855,000
Cent. Arg. ...	17,516,822	26,922,181	11,150,000
B.A. Pacific ...	17,594,310	15,774,656	11,935,000
B.A. Wstn. ...	5,752,022	6,079,405	6,200,000
Entre Rios ...	3,151,153	3,368,372	2,882,000
Arg. N.E. ...	3,297,385	4,660,458	3,270,000
French Coys.—			
Pv. of Santa Fe	2,035,562	5,368,492	4,730,000
Prov. of B. Ayres	*117,684	*379,295	857,000
Rosario Pto. Belgrano ...	1,212,828	*330,004	*450,000
State Rlys ...	†40,406,690	30,262,244	15,873,984

* Indicate loss. † Excludes Mitre Law adjustments

The above figures are published in the *Bulletin* of the Pan-American Railway Congress.

Colour Light Signals Outside Euston.—On June 11, 29 colour-light signals, mostly four-aspect, were brought into use, with continuous track circuiting, on the 1¼-mile section of the four L.M.S.R. main lines between Camden and Euston. The rising gradient of 1 in 70 leaving Euston has always been a severe handicap to traffic working, but the new signalling will enable trains to leave the terminal at closer intervals than hitherto. Greatly improved working also will result from the use of the colour-light signals mounted as near as possible to drivers' eye level, especially in fog and the bad visibility conditions which are prevalent in this area. This installation marks a further stage of the changeover from semaphore to colour-light signalling on the L.M.S.R. main lines from Euston. On completion of the work, continuous colour-light signalling will be in operation between Euston and Wembley with the exception of the Euston station area.

Concrete Sleepers.—At a meeting of the Manchester & Liverpool Section of the Permanent Way Institution, to be held in the lecture hall, Temperance Institute, Southport, on June 23, at 3 p.m., at the conclusion of other business, a lecture on "Concrete Sleepers" will be given by Mr. E. Heaton, A.M.I.Struct.E., of Newton Heath. Mr. Heaton is Resident Engineer of the L.M.S.R. Concrete Depot.

John Summers & Sons Ltd.—Speaking at the annual general meeting of John Summers & Sons Ltd., held recently at Hawarden Bridge Steelworks, Shotton, Mr. Richard F. Summers, the Chairman, said that, as to the future, he looked forward to a period of heavy demand, but it would undoubtedly be a period in which there would be many difficulties to overcome. It would be hard for the steel industry to compete with foreign producers so long as it had to bear the present very high cost of coal and raw materials.

Pre-Stressed Concrete Railway Sleepers

In this year's Royal Academy exhibition is shown a picture entitled, "The Test," reproduced above, by Dame Laura Knight, R.A., of Dow-Mac pre-stressed concrete railway sleepers being tested

[Copyright reserved for Artist or owner by "The Royal Academy Illustrated"

Contracts and Tenders

The formation of a Canadian subsidiary of the Baldwin Locomotive Works, to market in Canada such Baldwin products as turbines, water wheels, hydraulic presses, power tools and diesel engines from headquarters to be opened soon in Toronto, was announced recently by Mr. Ralph Kelly, President of the parent company in Philadelphia. The wholly-owned subsidiary, known as Baldwin Locomotive Works of Canada Limited, it is reported, will subcontract its orders. All production will be under the general supervision of Baldwin Locomotive Works of Canada Limited, and will be from Baldwin designs and specifications.

Below is a list of orders placed recently by the Egyptian State Railways:—

Richard Klinger Limited: Steam railcar spares.

J. Stone & Co. Ltd.: Rivets.

National Gas & Oil Engine Co. Ltd.: Delivery valves and seatings, pump elements.

Vacuum Oil Co. Ltd.: Steam railcar spares.

Joseph Thomspon (Sheffield) Limited: Circular slitting saws.

Arthur Balfour & Co. Ltd.: Hacksaw blades.

Ismailia Valve Company: Water-crane valves.

Sentinel Waggon Works (1936) Limited: Steam railcar spares.

Steel, Peech & Tozer Branch of The United Steel Companies Ltd.: Finished steel bars.

British Thomson-Houston Co. Ltd.: High-tension feeder panel.

Automatic Telephone & Electric Co. Ltd.: Pliers, spanners, and benders.

Thomas Smith & Sons (Rodley) Ltd.: Spanners.

Richard Melhuish (London) Limited: Spanners.

J. Parkinson & Son: Vices.

General Electric Co. Ltd.: Opal spheres.

Consolidated Brake & Engineering Co. Ltd.: Cylinders.

C. C. Wakefield & Co. Ltd.: Vacuum-brake cylinders.

Whitelegg & Rogers Limited: Spring and grease nipples.

Forthcoming Meetings

June 19 (*Tue.*).—The Industrial Transport Association, at the Institute of Automobile Engineers, Hobart Place, S.W.1. 6.30 p.m. "Inland Transport," by Mr. R. Sewill, M.A., M.Inst.T.

Railway Stock Market

Although earlier in the week business in stock markets was largely in gold mining shares, which showed general response to the higher price of gold, security values generally have been steady, sentiment reflecting the firmness maintained in British Funds. Industrial shares were quiet because of the disposition to await the result of the General Election. Movements, which were mostly small, have arisen from special reasons, particularly dividend announcements, which recorded a number of increases and exceeded expectations.

Home rails were easier, although the view prevails that the large yields more than discount the many uncertainties of the outlook, and that there may be scope for a good rally in prices in the event of a favourable outcome to the General Election. In any case dividends at last year's rates are generally expected to be maintained for at least another two years; expectations continue that the forthcoming interim decisions will be the same as a year ago. Argentine Rails lost part of last week's gains, but Canadian Pacifics continued prominent on American buying, and French railway sterling bonds remained under the influence of hopes of an early statement on the resumption of interest payments. Although, so far as Argentine rails are concerned, the outlook is regarded as promising because of the prospect of increasing prosperity in the Argentine, it is generally considered unlikely there can be material improvement in financial results of the railways until the Argentine Government adopts a more reasonable attitude to the railways, which must continue to play a vital part in the life of the Republic. Until the authorities there give the railways fair treatment, preference and ordinary stocks in most cases will have to continue to rank speculatively, although there would be possibilities of good appreciation in prices if, for example, Sir Montague Eddy's visit to the Argentine resulted in further modification of the attitude of the Government.

As compared with a week ago, movements in home rails have been small, and little buying has been reported. Great Western eased slightly from 54¾ to 54½, the 5 per cent. preference from 118½ to 118, and the 4 per cent. debentures from 116½ to 116. L.M.S.R. at 27 lost ⅜ of the improvement recorded a week ago, and the senior preference was 74½, against 75½; the 1923 preference also eased from 55½ to 54¾. There was little selling of home rails; the rather lower prices were attributed to absence of demand, reflecting inactive stock markets. Scheduled to run until at least one year after the termination of the war, the control agreement is now generally expected to remain in force for two more years. The war with Japan had not commenced when the control agreement was formulated. In any event, it can be expected that Government policy as to transport and the railways will be decided before long, and it is hoped the position will be clarified before the end of the current year.

L.N.E.R. stocks reflected the general trend; the second preference moved back from 28⅜ to 28, and the first preference from 55 to 54¼; the first guaranteed was maintained at 101, but the second guaranteed eased slightly to 95. Among Southern stocks, the deferred receded from 23½ to 22¾, the preferred from 72⅜ to 72¼; the 5 per cent. preference was slightly lower at 116½, also the 4 per cent. debentures at 114xd. London Transport "C" at 67¼ recorded a fractional decline.

A point to which importance is attached in some quarters is that it is not unlikely that the attitude of the Argentine to the British-owned railways operating there may be influenced by the decision of the British Government as to post-war organisation and control of railways and transport. Among Argentine rails, only a small part of recent gains has been lost, ordinary and preference stocks recording fractional declines. Buenos Ayres Great Southern ordinary was 12, after 12¼, the 5 per cent. preference 26⅜, compared with 27, and the 4 per cent. debentures 64½, compared with 65. In other directions, United of Havana 1906 debentures were steadier at 25. San Paulo ordinary was unchanged at 52½. Reflecting the better results, Antofagasta improved to 10¾, and the preference to 43½. Canadian Pacifics were 19⅜.

SKEFKO BALL BEARING CO. LTD.—The directors of the Skefko Ball Bearing Co. Ltd. have decided to recommend a final dividend of 6½d. per stock unit of 5s. (10⅝ per cent.) free of income tax, making 10½d. per stock unit of 5s. (17½ per cent.) free of income tax, for the year ended December 31, 1944. The net profits for 1944 amounted to £180,594 against £178,082 for 1943.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1943/4	No. of Weeks	Aggregate traffics to date: Totals 1944/5	Aggregate traffics to date: Totals 1943/4	Aggregate traffics to date: Increase or decrease	Shares or Stock	Prices: Highest 1944	Prices: Lowest 1944	Prices: June 12, 1945	Prices: Yield % (See Notes)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	3.6.45	36,000	+ 6,310	22	676,240	617,830	+ 58,410	Ord. Stk.	13½	9½	10½	Nil
	Argentine North Eastern	753	2.6.45	16,606	—	48	887,850	743,700	+ 144,150	,,	6¾	4¾	9	Nil
	Bolivar	174	May, 1945	4,670	— 789	21	25,635	26,518	— 883	6 p.c. Deb.	18¾	7¼	8½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds	19 1/16	15	21½	Nil
	Buenos Ayres & Pacific	2,773	2.6.45	129,375	+ 15,000	48	6,590,875	5,507,875	+ 1,083,000	Ord. Stk.	7 1/16	3¾	6	Nil
	Buenos Ayres Great Southern	5,080	2.6.45	178,562	+ 19,437	48	10,009,437	8,943,875	+ 1,065,562	Ord. Stk.	14⅝	9¾	11¾	Nil
	Buenos Ayres Western	1,924	2.6.45	83,750	+ 14,938	48	3,403,125	2,872,875	+ 530,250	,,	13¾	9¾	12	Nil
	Central Argentine	3,700	2.6.45	188,209	+ 29,340	48	8,671,944	7,765,962	+ 905,982	,,	10¼	6⅛	8½	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	4¾	3	4½	Nil
	Cent. Uruguay of M. Video	972	2.6.45	42,721	+ 5,966	48	1,683,079	1,670,557	+ 12,522	Ord. Stk.	5¾	4	6	Nil
	Costa Rica	262	Apr., 1945	28,642	+ 3,253	33	231,946	225,154	+ 6,792	Stk.	17¼	14½	15¾	Nil
	Dorada	70	May, 1945	35,000	+ 9,256	22	148,595	123,083	+ 25,512	1 Mt. Deb.	101	101	102½	£5 17/1
	Entre Rios	808	2.6.45	26,912	+ 5,868	48	1,195,344	992,969	+ 202,375	Ord. Stk.	6½	4½	5½	Nil
	Great Western of Brazil	1,030	2.6.45	19,400	+ 2,100	22	563,300	492,200	+ 71,100	Ord. Sh.	38/-	23/3	27/6	Nil
	International of Cl. Amer.	794	Apl., 1945	$238,269	+ $92,127	17	$816,062	$915,502	— $99,440	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	1¾	¼	¼	Nil
	La Guaira & Caracas	22¾	May, 1945	7,407	— 1,300	21	29,823	38,153	— 8,330	5 p.c. Deb.	88	79	78¼	£6 7/5
	Leopoldina	1,918	2.6.45	54,023	+ 6,672	22	1,003,197	1,006,760	— 3,563	Ord. Stk.	5⅞	4¼	4	Nil
	Mexican	483	31.5.45	ps. 974,200	+ ps. 218,400	22	ps. 13,177,200	ps. 9,170,400	+ ps. 4,006,800	Ord. Stk.	¾	½	2	Nil
	Midland Uruguay	319	Apr., 1945	17,777	+ 1,908	43	174,608	171,638	+ 2,970	—	—	—	—	—
	Nitrate	382	31.5.45	8,050	+ 1,720	21	76,150	81,870	— 5,720	Ord. Sh.	75/10	65/10	70/-	£3 11/5
	Paraguay Central	274	1.6.45	£60,073	— £3,331	48	£2,906,259	£2,524,352	+ $381,907	Pr. Li. Stk.	79½	68	78¼	£7 12/10
	Peruvian Corporation	1,059	May, 1945	133,173	+ 9,672	48	1,429,695	1,209,296	+ 220,399	Pref.	9	10	9¾	Nil
	Salvador	100	Apr. 1945	c 149,000	— c 3,000	43	c 1,308,000	c 1,310,000	— c 2,000	—	—	—	—	—
	San Paulo	153¼	—	—	—	—	—	—	—	Ord. Stk.	57¾	46	52½	£3 16/2
	Taltal	156	May., 1945	6,625	+ 1,485	46	32,905	59,800	— 26,895	Ord. Sh.	21/3	13/9	13/9	Nil
	United of Havana	1,301	3.6.45	48,856	+ 2,486	48	2,605,692	2,802,294	— 196,602	Ord. Stk.	4	2¼	2½	Nil
	Uruguay Northern	73	Apr., 1945	1,934	+ 467	43	16,230	14,732	+ 1,498	—	—	—	—	—
Canada	Canadian Pacific	17,028	7.6.45	1 211,600	+ 56,000	21	26,542,600	26,739,200	— 196,600	Ord. Stk.	17¼	13 1/16	19	£5 2·7
India	Barsi Light	202	Apr., 1945	31,072	+ 2,640	4	31,072	28,432	+ 2,640	Ord. Stk.	129½	97½	129½	£3 9/6
Various	Egyptian Delta	607	30.4.45	17,324	— 990	4	53,339	57,443	— 4,104	Prf. Sh.	7 1/16	5½	6½	Nil
	Manila	—	—	—	—	—	—	—	—	B. Deb.	63½	58	59	Nil
	Midland of W. Australia	277	Apr., 1945	16,473	— 4,148	44	189,748	291,154	— 101,406	Inc. Deb.	101½	99½	96½	£42/11
	Nigeria	1,900	24.3.45	94,631	+ 25,164	4	—	—	—	—	—	—	—	—
	South Africa	13,301	5.5.45	1,000,920	+ 108,249	5	4,962,074	4,276,017	+ 686,057	—	—	—	—	—
	Victoria	4,774	Jan., 1945	1,279,871	+ 18,572	4	—	—	—	—	—	—	—	—

Note. Yields are based on the approximate current price and are within a fraction of ⅛. Argentine traffics are given in sterling calculated @ 16 pesos to the £

† Receipts are calculated @ 1s. 6d. to the rupee